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THE ALLOSAURUS GROUP. DINOSAUR HALL (NO. 407, FOURTH FLOOR).

An Allosaurus, a great Carnivorous Dinosaur, is feasting upon the carcass of a Brontosaurus, an immense Herbivorous Dinosaur

The American Museum Journal

Vol. VIII JANUARY, 1908 No. 1

ALLOSAURUS, A CARNIVOROUS DINOSAUR, AND ITS PREY.

ONE of the latest additions to the Collection of Fossil Vertebrates is the mounted skeleton of Allosaurus, the great Carnivorous Dinosaur of the Jurassic Period, now on exhibition in the Dinosaur Hall. Although smaller than its huge contemporary Brontosaurus, this animal is of gigantic proportions, being 34 feet 2 inches in length, and 8 feet 3 inches high. The group forms one of the most remarkable and attractive features of the hall.

This rare and finely preserved skeleton was collected by Mr. F. F. Hubbell in October, 1879, in the Como Bluffs near Medicine Bow, Wyoming, the richest locality in America for dinosaur skeletons, and is a part of the great collection of fossil reptiles, amphibians and fishes gathered together by the late Professor E. D. Cope, and presented to the American Museum in 1899 by President Jesup.

Shortly after the Centennial Exposition, it had been planned that Professor Cope's collection of fossils should form part of a great public museum in Fairmount Park, Philadelphia, the city undertaking the cost of preparing and exhibiting the specimens, an arrangement similar to that existing between the American Museum and the City of New York. The plan however fell through, and the greater part of this magnificent collection remained in storage in the basement of Memorial Hall in Fairmount Park, for the next twenty years. From time to time Professor Cope removed parts of the collection to his private museum in Pine Street, for purposes of study and scientific description. He seems, however, to have had no idea of the perfection and value of this specimen. In 1899, when the collection was purchased from his executors by Mr. Jesup, the writer went to Philadelphia, under the instructions of Professor Osborn, Curator of Fossil Vertebrates, to superintend the packing and removal to the American Museum. At that time the collection made by Hubbell in 1879 was still in Memorial Hall, and the boxes were

piled up just as they came in from the West, never having been unpacked. Professor Cope's assistant, Mr. Geismar, informed the writer that Hubbell's collection was mostly fragmentary and not of any great value. Mr. Hubbell's letters from the field unfortunately were not preserved, but it is likely that they did not make clear what a splendid find he had made, and as some of his earlier collections had been fragmentary and of no great interest, the rest were supposed to be of the same kind.

When the Cope Collection was unpacked at the American Museum, this lot of boxes, not thought likely to be of much interest, was left until the last, and not taken in hand until 1902 or 1903. But when this specimen was laid out, it appeared that a treasure had come to light. Although collected by the crude methods of early days, it consisted of the greater part of the skeleton of a single individual, with the bones in wonderfully fine preservation, considering that they had been buried for say eight million years. They were dense black, hard and uncrushed, even better preserved and somewhat more complete than the two fine skeletons of Allosaurus from Bone-Cabin Quarry, the greatest treasures that this famous quarry had supplied. The great carnivorous dinosaurs are much rarer than the herbivorous kinds, and these three skeletons are the most complete that have ever been found. In all the years of energetic exploration that the late Professor Marsh devoted to searching for dinosaurs in the Jurassic and Cretaceous formations of the West he did not obtain any skeletons of carnivorous kinds anywhere near as complete as these, and their anatomy was in many respects unknown or conjectural. By comparison of the three Allosaurus skeletons with one another and with other specimens of carnivorous dinosaurs of smaller size in this and other museums, particularly in the National Museum and the Kansas University Museum, we have been enabled to reconstruct the missing parts of the Cope specimen with very little possibility of serious error.

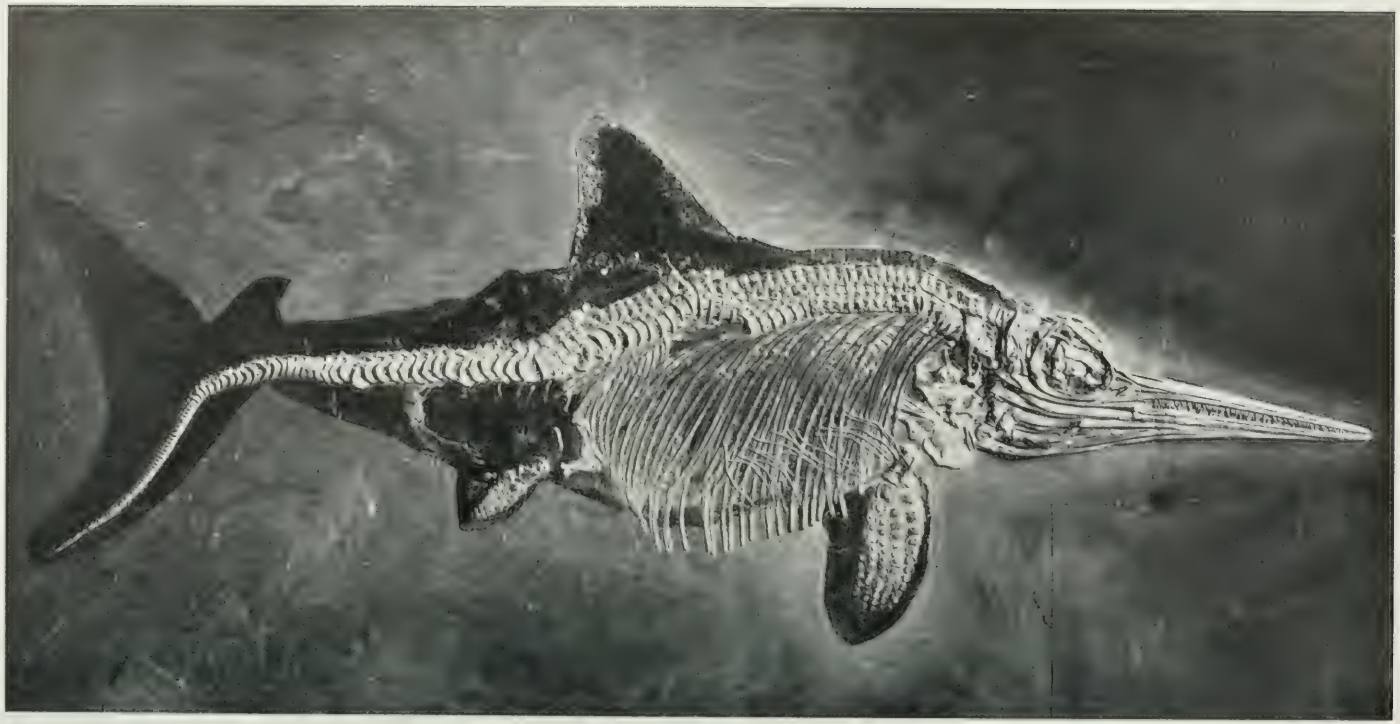
An incomplete skeleton of Brontosaurus, found by Dr. Wortman and Professor Knight of the American Museum Expedition of 1897, had furnished interesting data as to the food and habits of Allosaurus, which were confirmed by several other fragmentary specimens obtained later in the Bone-Cabin Quarry. In this Brontosaurus skeleton several of the bones, especially the spines of the tail vertebræ, when found in this rock, looked as if they had been scored and bitten off, as though by some carnivorous animal which had either attacked the Brontosaurus

when alive, or had feasted upon the carcass. When the Allosaurus jaw was compared with these score marks it was found to fit them exactly, the spacing of the scratches being the same as the spacing of the teeth. Moreover, on taking out the Brontosaurus vertebræ from the quarry a number of broken-off teeth of Allosaurus were found lying beside them. As no other remains of Allosaurus or any other animal were intermingled with the Brontosaurus skeleton, the most obvious explanation was that these teeth were broken off by an Allosaurus while devouring the Brontosaurus carcass. Many of the bones of other herbivorous dinosaurs found in the Bone-Cabin Quarry were similarly scored and bitten off, and the teeth of Allosaurus were also found close to them.

With these data at hand the original idea was conceived of combining these two skeletons, both from the same formation and found within a few miles of each other, to represent what must have actually happened to them in the remote Jurassic period, and mount the Allosaurus skeleton standing over the remains of a Brontosaurus in the attitude of feeding upon its carcass. Some modifications were made in the position to suit the exigencies of an open mount, and to accommodate the pose to the particular action; the head of the animal was lifted a little, one hind foot planted upon the carcass, while the other, resting upon the ground, bears most of the weight. The fore-feet, used in these animals only for fighting or for tearing their prey, not for support, are given characteristic attitudes, and the whole pose represents the Allosaurus devouring the carcass and raising head and fore-foot in a threatening manner as though to drive away intruders. The balance of the various parts was carefully studied and adjusted under direction of the curator. The preparation and mounting of the specimen were done by Mr. Adam Hermann, head preparator, and his assistants, especially Messrs. Falkenback and Lang.

As now exhibited in the Dinosaur Hall, this group gives to the imaginative observer a most vivid picture of a characteristic scene of that bygone age, millions of years ago, when reptiles were the lords of creation, when "Nature, red in tooth and claw" had lost none of her primitive savagery, and the era of brute force and ferocity showed little sign of the gradual amelioration, which was to come to pass in future ages through the predominance of superior intelligence.

W. D. Matthew.



THE ICHTHYOSAURUS, OR FISH-LIZARD

A remarkable and almost unique specimen, showing the outline and imprint of the body. Corridor beside entrance to Hall of Fossil Mammals, No. 406, Fourth Floor.

GUIDE-LEAFLET TO THE METEORITES IN THE FOYER.

DURING December the Museum issued a Guide-Leaflet under the title "The Foyer Collection of Meteorites" which gives a concise summary of the most important facts regarding meteorites in general that are of interest to the public and then describes in more detail the eight meteoritic falls or finds which are represented in the remarkable assemblage of specimens in the Foyer of the Museum. The Leaflet is No. 26 in the regular series and may be purchased at the door for ten cents.

THE NEW ICHTHYOSAURUS.

FOSSILS — real fossils, that is — rarely show anything except the skeleton or shell or other hard parts of the animal. The finds so often reported by the newspapers of petrified animals — calves' heads and birds in a sitting position, for instance — are usually merely concretions, formed indeed by natural agencies, which accidentally mimic the outer form of the animal. The resemblance is usually helped out a good deal by the imagination and occasionally by the knife of the finder. Such objects are easily distinguishable from genuine fossils, because they never show the characteristic internal structure of the animals or parts of animals which they resemble.

Occasionally, however, fossil skeletons show some traces of the skin or cartilages of the animal. Quite commonly the scales of fish are preserved showing the entire outline of the body. Less often the skeletons of fossil reptiles or mammals show traces of the horny scales of the skin, cartilaginous ribs, the wind-pipe or other half-hardened parts, and in fossil fish from the Devonian shales of Ohio, even the soft muscular fibre has been preserved and can be recognized under the microscope by its characteristic structure.

The most remarkable instance of this kind, however, is in the skeletons of the marine reptile *Ichthyosaurus* obtained in recent years from the slate quarries of Holzmaden in Germany. In these fossils, the outlines of the body, fins, paddles and tail are more or less completely preserved as a thin film of black bituminous matter. By dint of the most careful and painstaking work, Dr. Hauff has succeeded in developing several specimens so that they show the form of the animal with complete-

ness. The American Museum has for some time had the promise of one of these, when its preparation should be completed. The desired specimen was recently received and is now on exhibition in the Marine Reptile Corridor on the fourth floor. It is believed to be the most perfect example of its kind known, and it illustrates well the remarkably fish-like form of these marine reptiles. Although the structure of the skeleton, form and relation of the bones, shows that the Ichthyosaurus was a true reptile, an air-breather and related to the lizards, snakes and crocodiles, yet it has taken on the form of a fish, converted its tail into a fin and its legs into fin-like paddles, in adaptation to its marine environment, just as the whales, dolphins and seals have done among modern mammals. This interesting comparison has been very well and clearly set forth by Professor Osborn in a recent article in the Century Magazine, and it is illustrated in the hall by drawings of the Shark, Ichthyosaur and Dolphin.

W. D. Matthew.

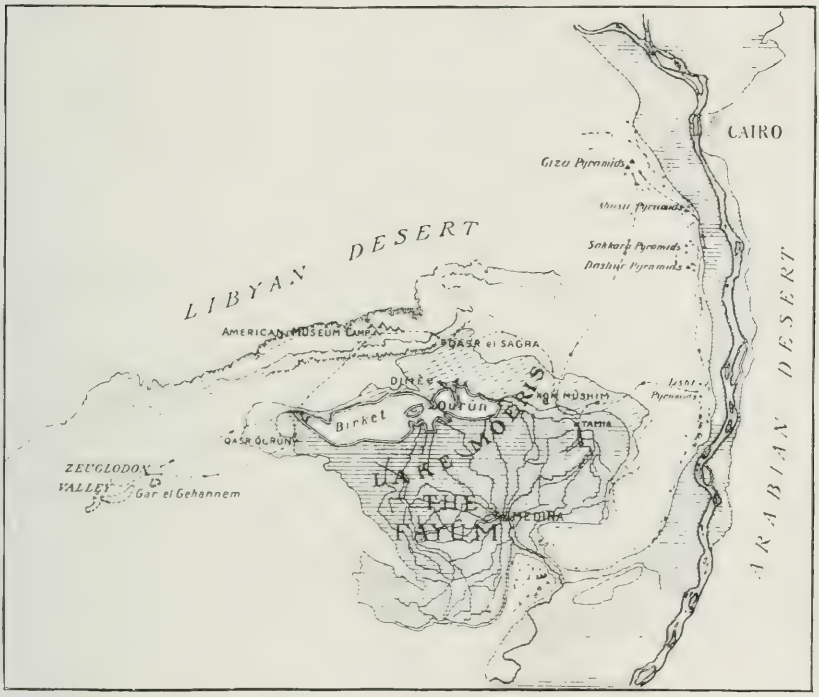
A PRELIMINARY NOTICE OF THE FAYÛM COLLECTION.

THERE has recently been placed in the Hall of Vertebrate Palæontology a special exhibit comprising some of the more important and interesting fossil mammals obtained by the expedition to the Fayûm, Egypt, during the winter and spring of 1907. A notice of the organization and departure of this expedition may be found in the Journal for February, 1907. The entire collection of about 600 specimens arrived at the Museum last September, but the extremely delicate condition of many of the specimens renders the work of preparation for preservation, study and exhibition a slow process and one to be carried on with the greatest care.

The Fayûm district — in which was the ancient Lake Mœris — has long been famous in the history of ancient Egypt, on account of the traditions and records clustering around it. In recent years it has acquired a new interest from the finding along its northern border of rich fossil beds containing the remains of mammals which inhabited Africa in early Tertiary times but long since became extinct. The Fayûm is a natural depression about 50 miles in diameter situated in the Libyan Desert, 50 to 75 miles southwest of Cairo and separated from the Nile valley by a narrow strip of desert. In early historic times the greater

part of the depression was covered with water which came through a natural canal from the Nile; at present, however, the area of the lake has been very much reduced by artificially limiting the supply of water, and most of the depression is a fertile irrigated tract, with a small lake (the Birket-el-Qurûn) occupying the lowest part. The surface of this lake is about 125 feet below sea level.

North of the lake the land is waterless and barren and rises rather abruptly by a series of terraces or benches to the rim of the depression,



SKETCH MAP OF THE FAYUM DISTRICT, LOWER EGYPT.

1200 feet above the water. These benches are made up of Middle and Upper Eocene deposits and it is here that most of the vertebrate fossils have been found. The deposits begin with marine beds at the base; above which are strata classed as fluvio-marine, above which again are fluviatile or river-delta deposits, forming the top of the series. This succession indicates that, long before the existence of the present depression, the southern shore of the Mediterranean Sea was in this vicinity; that the sea gradually reached northward, and that then a

mighty river flowing from the south emptied its waters here into the sea, before the crustal changes took place that raised the region to its present or a greater altitude. The river probably brought down many of the remains dug out of these deposits in recent years.

Vertebrate fossils were first discovered in the Fayûm in 1879 by Schweinfurth, but no extensive collecting was done until 1898, when a survey of the region was begun by Mr. H. J. L. Beadnell of the Geological Survey Department of Egypt. The richness of the deposits in

MUSEUM CARAVAN ENTERING THE DESERT NEAR THE LISHT PYRAMIDS.

fossil remains was then first made known. Mr. Beadnell was accompanied on several occasions by Dr. C. W. Andrews of the British Museum, and the results of their explorations were the discovery of a rather small but intensely interesting and varied vertebrate fauna and the amassing of a large amount of material for both the Cairo and the London museums. The combined material of these two museums has recently (1906) been described by Dr. Andrews in an elaborate "catalogue" published by the British Museum.

Although fossils occur in considerable abundance in the Middle Eocene strata, the energies of the American Museum party were pretty well confined to the Upper Eocene or fluvio-marine beds, which contain a much larger fauna. Here fossils were found usually in loosely compacted white or yellow sand, either as isolated specimens or in deposits where bones of thousands of animals had been washed together, hopelessly mixed up and often, especially in the case of skulls, badly broken. Two such deposits situated about a quarter of a mile apart had been discovered and extensively worked, but by no means exhausted, by the

MUSEUM CAMP AT QASR-EL-SAGHA.
Middle Eocene bluff in the background.

English parties. Through the courtesy of the Survey Department in Cairo, the American Museum party was allowed to continue the work of excavation in the quarries which had been opened by the English, and the greater part of the material obtained was from them, although the finer skulls were, in all instances, found elsewhere. The bones are only partly petrified, being in striking contrast to the hard, flinty, thoroughly petrified wood which is always found in association with them, but the most unfortunate feature of these Upper Eocene fossils is the lack of association of the parts of the skeleton. To find two

bones of one animal together was unusual, and this fact renders difficult the efforts to determine the relationships of the peculiar forms that were encountered.

With one or two minor exceptions, the entire known fauna of the Upper Eocene of the region is represented in the collection obtained by our expedition, and there is much material which will add to the published knowledge of these forms. In addition, several new forms were discovered, some of them representing new families. The collection is particularly rich in remains of the primitive carnivores, or creodonts,

EXHUMING SKULL OF ARSINOITHERIUM.
In the background the northern rim of the Fayoum depression.

of which two splendid skulls were obtained. The artiodactyls are well represented, as are also the hyracoids, animals with supposed relationship to the living *Hyrax*, or Coney. Of considerable scientific importance was the discovery of rodents, which are represented in our specimens by at least two genera.

The largest and most striking find in the Fayûm deposits was the *Arsinoitherium*, an animal with a body suggesting both an elephant and a rhinoceros. The head carried a pair of enormous horns on the

nose besides a pair of small ones directly over the eyes. A nearly complete skull of a young individual of this animal was secured, together with parts of many other skulls. Nearly all other parts of the skeleton are represented, too.

The most interesting part of the collection is the series of specimens illustrating the early stages in the evolution of the Proboscideans (Mastodons and Elephants). The later stages in the evolution of these animals are well represented in the fossils of both Europe and North America, and the American Museum has a fine series of skulls of these forms.

SEARCHING FOR FOSSILS IN THE PRODUCTIVE BED.

Six or eight feet of unfossiliferous sand has previously been removed from above the bone-bearing layer.

The earlier stages were unknown, however, before the discovery of this Eocene fauna of Egypt showed that the Elephants were of African origin and spread from there over both the Old and the New World. Two genera have been described from the Fayûm fossils: *Mærithium*, the smaller and more primitive, had probably but little resemblance to the modern Elephant, but *Palæomastodon* was of larger size and had already begun to develop a trunk and other peculiarities of the Proboscideans. Fine skulls and parts of the skeletons of both these genera

were secured and will enable the Museum to illustrate in an admirable manner the evolution of the Elephant from the primitive *Mœritherium* down to the modern species.

While the primary object of the expedition was to secure fossil mammals, some attention was devoted to collecting remains of the reptiles of the period, and these were found to be quite as abundant as those of the mammals. The collection includes shells of several species of aquatic turtles and skulls of several kinds of crocodiles, some similar to the crocodile now living in the Nile and others with long slender snouts like the gavials of the Ganges. Serpents and fishes are represented by fragmentary remains. Birds have been found, but their remains are so scarce and fragmentary as to be of no great importance.

WALTER GRANGER.

MUSEUM NEWS NOTES.

IN the material received from the Belgian government on account of the Congo exhibition are extensive assortments of native mats, baskets, iron implements and musical instruments. Among the musical instruments we note particularly an unusually long ivory trumpet and a drum five feet in length. Other articles of particular interest are those which constitute a Congo sorcerer's outfit, consisting of a face mask, a dog-tooth necklace and several fetishes in the form of human figurines rudely carved in wood. There is, too, a gourd which was used as a pipe stem for the smoking of hemp. In former days the hemp smokers were organized into powerful secret societies.

THE Museum is fortunate in having secured from Professor Eugene Schrœder a collection of ethnological material from the Bismark Archipelago in the South Pacific Ocean. Among the most valuable and striking of objects in the collection are several Malagans, or idols, from a Tabu, or Ghost house; an excellent example of the ancient Death Drum, which was sounded only on the demise of a chief, and several masks which were used by the men in the Init dance. It was against the laws for women to witness this dance, and one who was found attempting to look at the ceremony was immediately killed. The remainder of the collection consists of implements of war and the chase, musical instruments, personal ornaments, clothing and household

utensils. There are also many strings of small shell beads, called "Diwarra," which form the currency of the islanders. Thirty strings of Diwarra is the price usually paid for a wife.

Among recent acquisitions in the Department of Ethnology may be mentioned a stone idol — Ganesha, the God of Wisdom — from Benares, India, which is the gift of Miss T. Wilbour of New York City; archæological collections from Europe and South America received through exchange with Professor Giglioli of the museum in Florence, Italy; ethnological material from New Guinea, through exchange with the museum at Liverpool, England, and archæological objects from Bartholomew County, Indiana, made and presented by Dr. J. J. Edwards.

President Jesup has been made a Corresponding Honorary Member of the Senckenbergische Naturforschende Gesellschaft in appreciation of his gift of the Diplodocus skeleton to the Senckenberg Museum at Frankfurt on the Main, Germany.

In connection with the dedication of the Senckenberg Museum, Frankfurt, Director Bumpus was made a Corresponding Member of the Senckenbergische Naturforschende Gesellschaft.

Dr. J. A. Allen, our Curator of Mammalogy and Ornithology, was elected an Honorary Member of the German Ornithological Society in November. The honor thus conferred will be appreciated by those interested in the Museum when it is known that there are but nine such members listed in the latest publication of this important organization. Dr. Allen has also been transferred from the Foreign to the Honorary class of members of the British Ornithologist's Union.

Mr. Henry O. Havemeyer died at his country home on December 4. For about ten years he had been a Trustee of the Museum, and a further notice of him in connection with our institution will be given in a later number of the Journal.

LECTURE ANNOUNCEMENTS.

MEMBERS' COURSE

The second course of lectures to Members of the Museum and their friends will be given in February and March.

PUPILS' COURSE

The second course of free lectures to school children will be given in March and April.

PEOPLES' COURSE

The subjects for January are as follows:

Tuesdays at 8 P. M. Illustrated with stereopticon views.

January 7.—"The Picturesque Rhine." By Francis L. Strickland, Ph. D.
January 14.—"Historical Castles, Chateaux and Cathedrals of France." By Mrs. Helen Rhodes.
January 21.—"Spain." By John C. Bowker, M. D.
January 28.—"Isles of Fantasy." By John C. Bowker, M. D.

Saturdays at 8 P. M. Illustrated with experiments. Lectures by Professor von Nardroff.

January 4.—"Magnetism."
January 11.—"Electricity at Rest."
January 18.—"The Electric Current: Its Chemical Effects."
January 25.—"The Electric Current: Its Heating Effects."

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and Affiliated Societies are held at the Museum according to the following schedule:

On Monday evenings, The New York Academy of Sciences:

First Mondays, Section of Geology and Mineralogy.
Second Mondays, Section of Biology.
Third Mondays, Section of Astronomy, Physics and Chemistry.
Fourth Mondays, Section of Anthropology and Psychology.

On Tuesday evenings, as announced:

The Linnæan Society, The New York Entomological Society and the Torrey Botanical Club.

On Wednesday evenings, as announced:

The New York Mineralogical Club.

On Friday evenings, as announced:

The New York Microscopical Society.

THE HAITIAN SOLENODON.

From the mounted group in the American Museum.

The American Museum Journal

Vol. VIII FEBRUARY, 1908 No. 2

THE RARE INSECT-EATER, SOLENODON.

THE illustration on the opposite page has been made from the mounted specimens of Solenodon, the skins and skeletons of which were received at the Museum in June, 1907, as noted in the JOURNAL for last October. The Solenodon is one of the rarest animals known and will soon be absolutely exterminated by the mongoose, which was introduced into the island to get rid of snakes.

The genus Solenodon is the sole member of the family Solenodontidæ, and only two species are known. One of these (*Solenodon cubanus*) is confined to the Island of Cuba, where it is known as the Almiqui, while the other (*Solenodon paradoxus*) occurs only on the Island of Haiti, where, according to Mr. A. H. Verrill, who collected our specimens, it is known to the natives as the "Orso," "Milqui," "Homigero" or "Juron." The name "Agouta" is also applied to the animal, while the English-speaking negroes from the British West Indies call it a "Ground Hog." The animal is classed with the Insectivora.

The Solenodon is about as large as a rabbit and is singularly like the opossum in appearance. It has a long cylindrical snout, a long scaly tail and five toes on each foot, the forefeet being provided with long claws. The head and body are covered with rather thin coarse hair, which becomes thinner toward the rear and is nearly absent from the hind quarters. In color the coat, or pelage, is reddish-brown on the head and neck, changing to a rusty brown on the body. The animal's cry is a loud piercing peculiar note.

In the *American Journal of Science* for July, 1907, Mr. Verrill has published a short description of the animal in the course of which he says, "In its habits the Solenodon resembles a hog, rooting in the earth and cultivated grounds, tearing rotten logs and trees to pieces with its powerful front claws, and feeding on ants, grubs, insects, vegetables, reptiles and fruit, and at times proving destructive to poultry. On

several occasions it has been known to enter the houses in search of roaches and other vermin, and has been captured in rat-traps.

"It is strictly nocturnal, and spends the day in caves, holes in the coral limestone rocks and in hollow trees and logs. It is a slow, stupid creature. It is unable to run rapidly, but shambles along with the zig-zag, sidewise motions of a plantigrade. It is doubtless owing to this that it obtained the native name of "Orso" (bear).

"Its long snout and stout front feet, with their curved claws, and its thick, short neck prove impediments to forward progress. According to the natives it is incapable of running straight. They also claim that when pursued it frequently trips itself and tumbles heels over head. When hunted with dogs, it thrusts its head into the nearest hole or shelter and allows itself to be captured without resistance."

Five specimens of the Cuban form have found their way into the museums of Europe and America; while only one example of the Haitian Solenodon has been recorded, and this consists merely of a skin and skull which were sent to St. Petersburg in 1833 or before. The specimens recently secured by the American Museum are of this extremely rare Haitian form and are a gift from President Jesup. They were procured from the Kny-Scheerer Company, which had sent several expeditions to the island for the animal before that under Mr. Verrill was successful. The skeleton and soft parts of this Solenodon have been entirely unknown to science, but our recent acquisition will enable us to publish a full description of the bones.

A STONE IDOL FROM TAHITI.

EARLY visitors to the Society Islands, including Tahiti, state that the natives worshiped many different idols. The descriptions indicate that the images were usually carved from wood and that stone idols were rare, even at the time of the discovery of the islands by white men. The Museum therefore is fortunate in acquiring the ancient stone idol from Tahiti which recently came as a gift from G. Archibald McTarvish, Esq., and which is illustrated on the opposite page. A human head and arms have been roughly carved on the upper end of the stone, otherwise it has been but slightly worked. The image stands 18½ inches high and weighs 93 pounds.

A STONE IDOL FROM TAHITI.

Height, 18½ inches; weight, 93 pounds.

PETROGLYPH NEAR SHOSHONE, WYOMING.

The carving is about eighteen inches long.

AN ARCHÆOLOGICAL RECONNAISSANCE IN WYOMING.

LAST summer the writer made an interesting archæological reconnaissance of the southern half of the State of Wyoming. This region is near the center of a vast neglected field for archæological research to which attention was called in the Boas Anniversary Volume of 1907.

The neglected area extends from the arctic region on the north to the Mandan country of Dakota and the well known archæological field of the Mississippi Valley on the east, to the Cliff Dwellings on the south and to the rich territory of the Santa Catalina Islands, the Sacramento Valley of California, the plateau region of Washington and British Columbia on the west. The area is so vast and the problems are so numerous, that no one institution, much less any individual, should hope to do more than begin the work.

Among the problems to be solved, the following may be mentioned: When did man first appear in the region? Judging from the results of exploration in other places, it may take many years of the combined efforts of all who are interested before extensive evidence on this point is discovered. What was the culture of the first inhabitants? Was there more than one culture in the area, either at various places or during different periods? How was the culture affected by the introduction of the horse? No doubt the coming of the horse to a people whose only beast of burden had been the dog caused a great advance in their general culture, as it would enable them to travel further in search of food, to possess and transport more property and to become somewhat more independent of the scanty water supply of the region.

The larger part of the area was inhabited by tribes of Indians belonging to the Athabascan, Algonkin, Siouan and Shoshonean groups. An examination of the archæological remains will throw light upon the early history of these people and their migrations.

The central portion of the area was the home of the American bison, upon which the Indians, when first met by the whites, depended not only for food, but also for the material for clothing, moccasins, covers for tipis and ferry boats or rafts, backgrounds upon which to paint calendars and other things of like character. The horns and bones furnished material for various articles and implements, among which may be mentioned spoons, bowls and skin scrapers.

After all the vaunted superiority of the white race, our people today are holding their cattle much as the Indians held the buffalo. For instance, the Indians held the herds at the North Platte River in order that the tribes living north of the river might be able to get the buffalo all through the year, for if left to themselves, the herd would have traveled farther to the south in winter. Our round-up and general treatment of the cattle of the plains, resembles today and always has resembled in wildness and cruelty the buffalo hunt of the Red Man.

In the eastern part of Wyoming, some extensive quarries, where the prehistoric people found quartzite and jasper, out of which to make chipped implements, have been known for some years. These were visited, and specimens and photographs were secured.

In the same general region other extensive quarries were found, some of which were acres in extent, and notes were taken of still other quarries known to the local ranchers. Nearly everywhere in Wyoming, but more particularly in the eastern part, circles of stones marking the sites of ancient tipis were found. They may be counted by the hundred in the southern part of Converse County. These stones were no doubt used to hold down the skin covering of the tipi. Stones are still employed for this purpose by the Blackfoot Indians in Montana, only a short distance to the north.

Pictographs painted in red and black and petroglyphs cut or pecked on the cliffs were noticed, particularly in the vicinity of the Wind River Mountains. Some of these represent horses (see the illustration on page 22), proving them to have been made since the white man brought the horse to America, others represented the buffalo.

Steatite pots in the form of an egg, and apparently of a type unknown in other parts of America, were noticed, especially in western Wyoming. True pottery was rare. Less than a dozen sites were found where it occurred, and these were all well towards the southern part of the State. They probably mark the northern limits of pottery in this portion of the area.

In the vicinity of Hammond in the Algonkin area, caves were found into which the wolves had dragged bones of cattle, sheep and other animals, and in front of which there are much village débris, many tipi circles and some petroglyphs. These caves probably contain many remains, and this vicinity, as well as the western slope of the Wind River Mountains, would probably repay detailed exploration. Several

months' work in the latter region would be sure to enable the explorer to secure a collection of photographs, illustrating the art of the vicinity, as executed in the form of petroglyphs.

It would seem to be the duty of the students of the Cliff Dwelling and Pueblo region to explore northward into this vast neglected area, in an attempt at finding the northern limit of that culture. The students of the archæology of the Mississippi Valley, have a similar duty to perform in determining the western limits of the agricultural culture of that valley, while the students of California owe it to the world to investigate the eastern portion of that State. The eastern limits of the plateau culture of southern British Columbia and Washington should also be defined.

HARLAN I. SMITH.

DEPARTMENT OF MINERALOGY.

THE mineral accessions for 1907 were, for the most part, secured by means of the income of the Bruce endowment. Some of the new specimens, *viz.*: the interesting beryl crystals from North Carolina, the superb polybasite group from Mexico, the unique native copper from Arizona and the splendid Brazilian andorite have already been recorded in the pages of the JOURNAL, but others are as worthy of mention. An excellent display of the attractive opaque pink beryls from Haddam, Conn., was made by Mr. S. C. Gillette at the Progress of Science exhibition of the New York Academy of Sciences last winter, and five beautiful and instructive crystals were purchased from him for the cabinet. They are prisms with base and terminal pyramid — the latter in varying stages of development — in a quartz matrix. A specimen of autunite — the yellow uranate of lime — from Mitchell Co., N. C., has interest, and a hand specimen of the uraninite of Central City, Colorado, which carries gold and has been studied by Crooke, Becquerel and Curie on account of its richness in radium, deserves mention. Two light-blue simple crystals of beryl from Mesa Granda, Col., massive thalénite from Sweden, mangano-tantalite from western Australia, heulandite from Norway, the rare mercury oxides terlinguaite and eglestonite from Texas, a remarkable baddeleyite (?) from Brazil, thorianite from Ceylon, cobaltite from Temiskaming and a huge dyscra-

site, or antimonial silver, from the same famous locality, humite (a recent determination) from Franklin Furnace, N. J., with two really admirable menaccanites, in solid, well-developed and distorted crystals from Norway, embrace the most important purchases.

An exchange of some interest was made with Prof. T. Wada of Japan for Japanese minerals and one with Mr. Otto F. Pfordte for Nipissing specimens of silver and silver ores.

Mr. F. A. Canfield donated an excellent native lead from Sweden, and a characteristic chrysotile from the Grand Canyon of the Colorado was received from the Hance Asbestos Mining Co. A representation of the iron sulphates (copiapite, coquimbite, amarantite and others) from Atacama, Chile, was given by the distinguished collector and mineralogist, Mr. John H. Caswell, and through Prof. James Douglas there were received from Dr. L. D. Ricketts two sections of colored stalactites from Bisbee, Arizona. One of the superb amethyst-colored calcite crystals from Sterlingbush, St. Lawrence Co., N.Y., which formed a prominent feature in the mineralogical series at the Academy exhibition already referred to has been received from Mr. H. P. Whitlock of Albany.

Several additions have been made to the New York Mineralogical Club's collection illustrating the mineralogy of Manhattan Island and to the Museum series showing the basement rocks underlying the city.

L. P. Gratacap.

A MODEL OF THE LARGEST DIAMOND KNOWN.

THERE has recently been placed on exhibition in the Hall of Mineralogy (Case 25, north end, east side) a natural-sized model in glass of the great Cullinan diamond which the Museum has received as a gift from the Premier Transvaal Diamond Mining Company, Limited, Johannesburg, South Africa. The Cullinan Diamond has received its name in honor of the Chairman, or President, of the Premier Company in whose ground it was found. The stone was discovered by Mr. Wells, surface manager for the company, in the so-called "yellow ground" some eighteen feet below the surface. Its net weight was 3,024$\frac{3}{4}$ carats (1 pound, 6 ounces avoirdupois) which is more than three times the weight of the largest diamond previously known,

the celebrated Jagersfontein stone discovered in 1893. The Cullinan stone, which is of perfect color and lustre, is bounded by eight surfaces, four of which are faces of the original octahedral crystal, and the other four are cleavage surfaces, parallel to the face of the octahedron. The size and position of these cleavage surfaces indicate that considerable portions, amounting perhaps to more than half of the original crystal, have been separated from it and lost. This is the gem which the Transvaal Colony recently presented to King Edward VII.

On account of the great size of the stone special machinery must be made for cutting it, and it is estimated that from eighteen months to two years will be needed for reducing the gem to final size and shape. A London expert is said to have expressed the opinion that the diamond will be cut into three stones, one of a thousand carats and two of eighty carats each.

A COLLECTION OF MEXICAN AND CENTRAL AMERICAN BEETLES.

THROUGH the generosity of F. DuCane Godman, Esq., who is a well-known English scientist and is the editor of the famous work entitled "Biologia Centrali-Americana," the Museum recently has received as a donation a valuable collection of beetles from Mexico and Central America. This collection is of unusual scientific importance, since it is part of the material upon which the volumes of this publication pertaining to the Coleoptera have been based. The collection contains more than 4,000 specimens representing 1,679 species, many of which were described as new to science in the "Biologia" by Messrs. David Sharp, Henry Walter Bates, Henry Stephen Gorham, George C. Champion, J. S. Baly, Martin Jacoby and other specialists on beetles. The authoritative identifications of the species in this collection make it of particular value to students of Coleoptera, and it will be of great assistance in the labeling of much hitherto unidentified material in the possession of the Museum and in private collections.

THE Museum has been fortunate recently in securing, through purchase, a number of Orang-Utan skins from Borneo. The collection contains the skin and entire skeleton of one unusually large individual.

THE MUSEUM BULLETIN FOR 1907

THE twenty-third volume of the Bulletin of the American Museum was issued during the year 1907, and is the largest single volume of the series that has been published, containing about one thousand pages of text matter and fifty-four plates. The wide range of activity of our scientific staff in research in the various departments of natural science is indicated by the titles of the thirty-six articles comprising the volume, as given in the following list. The articles are technical in character, but many of them have much general as well as scientific interest. They are published separately and, like the complete volume, may be obtained from the librarian.

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MUSEUM NEWS NOTES.

THROUGH the generosity of Hon. Mason Mitchell, American Consul at Chungking, China, the Museum has secured a small, but valuable, collection of mammals from the border of Tibet. Comparatively little is known of the zoölogy of this region, and the Mitchell collection contains several forms which are apparently new to scientists. Two skins of the Takin (*Budoscas taxicolor*), an extremely rare antelope, are of particular interest. Mr. Mitchell is probably the first white man to kill this animal, of which no mounted specimens exist in the museums of Europe or America.

THREE Tibetan scrolls were among the material presented to the Museum by Mr. Mitchell. In a letter regarding them, dated Chungking, China, July 16, 1907, Mr. Mitchell says:— "The scrolls are very rare and seldom to be secured, as the Lamas will not sell them; they are too sacred. In the summer of 1906, the Yellow Lamas killed four French priests. The soldiers sent against them put the Lamas to flight and looted the temple. These scrolls were later obtained from the soldiers."

SEVERAL interesting specimens from the Sakai, the aborigines of the Malay Peninsula, have been presented by Mr. Caspar Whitney, of this

city, who collected them himself. The collection consists of an ornamented piece of bamboo, which is worn in a hole through the septum of the nose, a wooden instrument used in making bark cloth, and a number of pieces described by Mr. Whitney as a Sakai wardrobe. This "wardrobe" is made up of several bands made from the inner bark of a tree, bunches of leaves and an ear-ornament. The broader bands are worn by the women about the hips, and the bunches of leaves are suspended therefrom. The narrow strips are forehead-bands. The ear-ornament is a bunch of grass, one end of which is encircled by a broad ring of bamboo. This is worn in the lobe of the ear with the bunch of grass extending forward.

The Gem collection has been enriched by a wonderful specimen of crystallized gold from California presented to the Museum at Christmas time by J. Pierpont Morgan, Esq. An arborescent aggregate of perfect little octahedral crystals of pure gold is daintily held in the midst of a cluster of clear, prismatic crystals of quartz, forming what many experts consider to be the most beautiful specimen of the kind in any collection.

The following additions to the membership of the Museum have been made between December 1, 1907, and January 15, 1908: Fellow, Miss Carola Woerishoffer; Life Members, Edward C. Bohde, Charles E. Slocum, M. D., LL. D.; Annual Members, William N. Hoag, A. G. Wheeler, Jr., John M. Clark, T. Ferdinand Wilcox, W. H. Goadby, John G. McIntyre, Robert Muller, Jr., M. Schuyler Smith, Miss Gertrude Whiting, Miss Emily Redmond, Mrs. May Valentine Fisher, P. R. G. Sjöström, Bernhard B. Amrom, David M. Hunter, Theodore Wentz, Bernard F. Amend, Henry E. Meeker, Douglas Alexander.

LECTURE ANNOUNCEMENTS.

PEOPLES' COURSE.

The subjects of the lectures to be given in February are as follows:
Tuesdays at 8 P. M. Illustrated with stereopticon views.

February 4.— "France: Her History Written in Stone." By Louis F. Berry.

February 11.—"The Highlands and Islands of Scotland." By Clinton G. Abbott.
February 18.—"The Homes of the Poets." By Sutton Fletcher.
February 25.—"Fighting the Polar Ice." By Anthony Fiala.

Saturdays at 8 P. M. Illustrated with experiments. Lectures by Professor Ernest R. von Nardroff.

February 1.—"The Electric Current: Its Magnetic Effects."
February 8.—"The Electric Current: Its Inductive Effects."
February 15.—"Cathode Rays, and Röntgen Rays."
February 22.—"Wireless Telegraphy."
February 29.—"Radium."

These lectures are given in coöperation with the Department of Education of the City of New York. They are open free to the public and no tickets are required for admittance, except in the case of children, who, on account of the regulations of the Department of Education, will be admitted only on presentation of the ticket of a Member of the Museum.

The doors open at 7:30 o'clock and close when the lectures begin.

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and Affiliated Societies are held at the Museum according to the following schedule:

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First Mondays, Section of Geology and Mineralogy.
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On Tuesday evenings, as announced:

The Linnæan Society, The New York Entomological Society and The Torrey Botanical Club.

On Wednesday evenings, as announced:

The New York Mineralogical Club.

On Fridays evenings, as announced:

The New York Microscopical Society.

The programs of the meetings of the respective organizations are published in the weekly *Bulletin* of the New York Academy of Sciences and sent to the members of the several societies. Members of the Museum on making request of the Director will be provided with the *Bulletin* as issued.

MORRIS K. JESUP

PRESIDENT OF THE MUSEUM FROM 1887 TO 1908

From the portrait in the Museum, painted in 1892 by Eastman Johnson

MORRIS KETCHUM JESUP.

MORRIS KETCHUM JESUP, one of the incorporators of the American Museum of Natural History, a trustee since its organization, and president since February, 1881, died at his home on Madison Avenue, New York City, Wednesday, January 22, 1908, in his seventy-eighth year. A most liberal and intelligent patron of science and of education in its broadest sense, the great loss to the city and nation due to his demise falls most heavily upon the Museum to which for nearly forty years he had devoted in the most direct and personal manner the wonderful ability that made him successful along many and varied lines of activity and brought him well-merited honors at home and abroad. An account of Mr. Jesup's life and of his long and efficient services to the Museum will appear in the form of a special memorial publication.

The American Museum Journal

Vol. VIII MARCH, 1908 No. 3

THE BISMARCK ARCHIPELAGO COLLECTION.

THE Schröder Collection from the Bismarck Archipelago in the South Seas, the acquisition of which was announced in the January JOURNAL, contains many objects which are becoming very scarce, through intercourse of the natives with European and American traders. The collection has already served as the basis of Professor Schröder's publications, but these are inaccessible to the general public, and our Members will be interested to learn something about the more noteworthy specimens and what they represent.

The native inhabitants of the archipelago belong to the Papuan race and are cannibals. Cannibalism, however, like many other of the native customs is disappearing under the influence of the white men with whom the people have come into contact. Clothing is worn but little by the islanders; usually a band about the hips suffices, and even this is often dispensed with. Heavy ear-ornaments are in great vogue. Sometimes these are so large and weighty that they draw the lobe of the ear down to the shoulder. The people have the custom too of piercing the septum of the nose to receive ornaments of bone and other substances.

The Papuans are firm believers in departed spirits as active participants in current events, and ghost, or "taboo," houses are scattered through the islands. One of the houses is represented on page 38 from a photograph taken by Professor Schröder. The framework of the structure consists of posts and rafters of wooden or bamboo poles. The roof and sides are thatched with grass, but one of the sides is only partly closed, so that the contents of the house are exposed to view. In such a house are kept the "malagans" or idols. All these malagans represent various evil spirits or devils, and the propitiation of these constitutes the only native religion, if this may be called a religion, of these people. At stated times a ceremonial dance is performed about the ghost house in which women are seldom allowed to take part. Another mystic

E. Schröder, Photo.

A TABOO, OR GHOST HOUSE IN THE BISMARCK ARCHIPELAGO

ceremony, known as the "init" dance, is always performed by men, who go through certain rites to the accompaniment of barbarous songs, the shrill notes of the Pan-pipes and the din of shell trumpets and drums. Women are prohibited under penalty of death from witnessing this ceremony.

Five malagans from a ghost house are shown on page 40. The central one is nine feet four inches high and presents the appearance of being composed of many figures and slat-like pieces joined together. In reality, however, it has been carved from a single log, and the same is true of the others. The human figure, animals, birds and fish, all much distorted or conventionalized, form the motives of the carvings. The colors used in decorating these malagans are white, red and black. If the present natives attach any particular attribute to each of these idols, it has not been ascertained, and the probability is that their original significance has been lost.

Several characteristic objects of this region is shown in the illustration on page 41. At the left is a wooden dance-drum (No. 1) carved from a log of palm wood. The handle is considerably above the center, hence the drum, when grasped by the left hand, hangs at such an angle as to bring the head in convenient position to be reached by the right hand. The head is of snake skin, and is usually beaten with the fingers, but sometimes with a small stick. The lower end shows a form of decoration common to most of the islands of the South Seas. The depressions of the carved designs are filled with lime. The white color of the lime contrasts strongly with the dark color of most palm wood. Nos. 2, 3 and 5 are shark hooks. The shanks are of wood, and the curved points are made from the shell of the Tridacna and other large mollusks. No. 4 is an ax-like implement with a blade made from a large shell. Two pieces of wood, hollowed out to receive the upper end of the shell blade are bound together and to the handle by a thong made from some creeping plant. These shell blades are much harder and more serviceable than is generally supposed, and answer well for many purposes, especially in making canoes, the wood being first charred with fire and then hacked out with such an ax or chisel.

An ancient death-drum, or "nunut" is shown by No. 6. This rare specimen, which is the most highly prized piece in the collection, is carved from a log of some hard, dark wood, probably a species of palm. Each of the three tongues gives out a note of a different pitch from the

MALAGANS FROM A GHOST HOUSE, BISMARCK ARCHIPELAGO

others. In former times this instrument was only used on the death of a chief, and we are told that the discord produced by its tones was supposed to be "spirit voices." Parkinson, however, in "Dreissig Jahre in der Südsee" says that the sound closely resembles the braying of

IMPLEMENTS AND MUSICAL INSTRUMENTS, BISMARCK ARCHIPELAGO

1. Dance drum. 2, 3, 5. Shark hooks. 4. Ax, with shell blade. 6. Death-drum. 7. Shell trumpet. 8, 9, 12, 13. Knives. 10. Dagger. 11. Pan-pipe. 14. Lime-gourd and spatula.

an ass. The player held the instrument between his knees, and drew the palm of his hand, which had previously been covered with some resinous substance, over the three tongues, causing them to vibrate.

No. 7 is a trumpet made from the shell of a Triton. Shells of Triton, Ranella and Cassis are generally used for this purpose simply by making a hole in one of the upper whorls for the mouthpiece. The sound of this instrument can be heard for the distance of half a mile or more, and is still often used to signal the approach of a vessel. It is the favorite musical instrument at all native gatherings and feasts. Nos. 8, 9, 12 and 13 are native knives with wooden handles and obsidian blades. These are in common use for all sorts of purposes, and are extremely serviceable implements. Many primitive peoples have employed obsidian, or volcanic glass, in different ways, but chiefly in the form of knives and points for weapons. The striking physical characteristic of obsidian is its conchoidal fracture, a property which makes it a comparatively easy matter to detach from a core, long flakes which often have keen edges. The wooden handles are decorated with engraved designs, the depressions painted or filled with lime. No. 10 is an elaborately carved dagger made from the leg bone of a cassowary. No. 11 is a Pan-pipe of reeds. Pan-pipes among primitive peoples had wide distribution, as we should expect. What is more natural than to blow into a piece of bamboo or cane and produce a tone; later on the experiment would be repeated with a cane differing in length from the first, and a note of different pitch would result. The tying together of two or more canes of different length would be but a short step forward, and then we have the Pan-pipe. No. 14 is a lime-gourd and spatula for holding and mixing the shell-lime which is chewed with the betel. The decoration on this gourd, which is quite elaborate, has been burned in.

C. W. Mead.

THE SOUTH AMERICAN BLOW-GUN.

THE blow-gun for propelling a poisoned arrow is the favorite weapon of the Indian in many regions of northern South America. Although these curious weapons vary in construction in different localities, they are alike in principle, consisting of a tube from eight to twelve feet in length which generally tapers from one to two inches in diameter at the mouth end to about three-quarters of an inch at the farther extremity. The bore of this tube is about three sixteenths of an inch in diameter. In some localities a cup-shaped mouthpiece of hard wood is attached to the larger end.

Along the Upper Caiarý-Uaupés blow-guns are made from the stems of a variety of palm (*Iriartea setigera* Martius). These palm stems have often been described as canes on account of their having rings of scars of the fallen leaves which closely resemble the joints of canes or bamboos. The Indian selects two stems of such sizes that the smaller will exactly fit within the larger. After these stems have been carefully dried and the pith cleared out with a long rod, the bore is made smooth by drawing back and forth through it a little bunch of tree-fern roots. The smaller stem is then inserted in the larger, so that one will serve to correct any crookedness that may exist in the other. The wooden mouth-piece is then fitted to one end, and about three and one half feet from it, a boar's tooth is fastened on the gun by some gummy substance, for a sight. Over the outside the maker winds spirally a strip of the dark shiny bark of a creeper which gives it an ornamental finish, and his blow-gun is complete.

In some localities instead of the two canes a single piece of palm wood is used, which is split into two equal parts throughout its length, each piece hollowed out, and the two divisions afterward cemented together like the divisions of a cedar-wood pencil.

The arrows are from ten to fourteen inches long, and of the thickness of an ordinary lucifer match. Those of the Indians of the Caiarý-Uaupés are made from the midrib of a palm leaf or of the spinous processes of the Patawá (*Œnocarpus Bataua*) sharpened to a point at one end and wound near the other with a delicate sort of wild cotton which grows in a pod upon a large tree (*Bombax ceiba*). This mass of cotton is just big enough to fill the tube when the arrow is gently pressed into it. The point is dipped into poison, allowed to dry, and redipped until well coated. The exact composition of this poison is unknown, and probably varies in different localities; but it would seem that the chief ingredient is always the juice of a Strychnos plant. It is known among different tribes by many names; such as Curari, Ourari, Urari and Woorali. Poisoned arrows are dangerous things to handle, and they are always carried in a quiver which has been partly filled with cotton or some other soft vegetable material, into which the poisoned ends of the arrows are thrust for protection. The blow-gun is called "Sarabatana" on the Upper Caiarý-Uaupés, and by many tribes in the Amazon region it is known as the "Pucuna." The Portuguese of the River District call it "Gravatana."

The blow-gun in the hands of an Indian is a very effective weapon, and a skilled marksman will kill a small bird at thirty or forty paces. It is particularly deadly when used against birds or monkeys in the tops of trees, as in shooting in a direction nearly vertical the hunter can take the surest aim. The poison acts very quickly, seldom requiring more than two minutes to do its work, but the length of time depends much on the size of the game and the condition of the poison used.

In the Museum's recently acquired collection from the Indians of the Upper Rio Caiarý-Uaupés region are several of these blow-guns and many of the arrows used with them.

C. W. Mead.

EXHIBITION SHOWING THE CONGESTION OF POPULATION IN NEW YORK CITY.

For two weeks, beginning Monday, March 9, there will be held at the Museum an exhibition showing the congestion of population in New York City and illustrating graphically the means proposed and being taken for the amelioration of conditions among the poor of the city. Maps will be used to indicate, among other facts, the location of tenements erected within the last few years, all the existing transportation lines, the comparative density of population in the different boroughs of the city and in New York in relation to other cities, the location of unoccupied farms in the State and of men and families who have been placed on farms during the past year, the location of "sweated" industries in the lowest part of the city, the number of factories and workers per acre and the distribution of child labor.

Models constructed according to scale will be exhibited to show the old-law and new-law tenements, the increase in the height of buildings in the last twenty-one years, an open-space tenement containing playground and park but covering only half the site of the building, normal school rooms and crowded school-rooms, and a series of dark and light rooms, apartments in a typical down-town tenement and apartments illustrating the work of the Practical Housekeeping Centers Association.

In connection with the first week of the exhibition several conferences will be held beginning Monday evening, March 9, under the presidency of President John H. Finley with addresses by Governor

Hughes, His Excellency Baron des Planches, Italian Ambassador to the United States, Commissioner Hebberd and Mrs. Vladimir G. Simkhovitch. The topics to be considered at the succeeding conferences are as follows: Tuesday morning at 10 o'clock, Neighborhood Work; afternoon at 3:30 o'clock, Home Conditions in the Congested Districts; evening at 8:15 o'clock, Density and Distribution of Nationalities with addresses illustrated by stereopticon. Wednesday morning at 10 o'clock, there will be a meeting of the New York State Consumers League; afternoon at 3:30 o'clock, a conference on Children in Congested Districts; evening at 8:15 o'clock, on Labor and Congestion, with illustrated addresses; Thursday afternoon at 3:30, a conference of Delegates from cities in New York State; evening at 8:15 a conference with popular addresses by Professor J. W. Jenks, Mr. C. M. Robinson and Hon. Lawson Purdy as given in the program of the Members' Course of Lectures on this page.

LECTURE ANNOUNCEMENTS.

MEMBERS' COURSE.

Thursdays at 8:15 o'clock P. M.

March 5.— V. Stefánsson, "A Year with the Eskimo at the Mouth of the MacKenzie River."

As a member of the recent Mikkelssen Arctic Expedition, Mr. Stefánsson went overland to the Mackenzie and down that river to its mouth. Here he expected to meet the other members of the party, but the loss of their ship prevented their arrival, and Mr. Stefánsson, in the absence of supplies, became the guest of the Eskimos.

March 12.— The following addresses will be given in co-operation with the Committee on Congestion of Population in New York.

Professor Jeremiah W. Jenks, Cornell University, "Physiographic and Economic Causes for the Growth of Cities."

Mr. Charles M. Robinson, Rochester, "Town Planning."

Hon. Lawson Purdy, President of the Board of Taxes and Assessments of the City of New York, "The Effect of Taxation upon Distribution of Population."

March 19.— Charles F. Fay, "The Grandeur of the Canadian Alps, or Mountaineering in a New Switzerland."

Professor Fay, who is a former president of the American Alpine Club, has had an extended personal experience in the Canadian Rockies which has given him exceptional opportunities to secure illustrations of the scenery of this marvellously beautiful region. From a detailed presentation of its main features the lecture passes to a narrative of high ascents.

March 26.— W. P. Hay, "The Applicability of Color Photography by the Lumière Process to Scientific Work."

Mr. Hay will explain the method of handling the Lumière plates and demonstrate the principles upon which they are based. Direct color-photographs will be projected by the stereopticon to illustrate the accuracy with which the colors of shells, butterflies, beetles and other strikingly colored objects may be reproduced by this process.

April 2.— Clifton F. Hodge, "The Propagation and Domestication of American Game Birds."

Professor Hodge has accomplished what was at one time thought to be the impossible task of raising Quail and Grouse in confinement. His experiments have not only permitted him to photograph drumming Grouse, and in other ways to gain a new insight into the lives of these birds, but they have high economic value.

April 9.— O. P. Austin, "Queer Methods of Transportation."

A view, by motion pictures and stereopticon slides, of the curious methods of travel and transportation encountered in a trip around the world; the crude methods of the Tropics and the Orient are contrasted with the modern systems of Europe and America, and some suggestions are presented regarding the possibility of development of the Tropics and the Orient through the introduction of modern methods.

AFTERNOON TALKS TO MEMBERS.

A series of talks to Members on museum methods and collections by members of the Scientific Staff has been begun. The talks are given Monday afternoons at 3 o'clock according to the following schedule:

February 24.— F. M. Chapman, "The Habitat Groups of Birds."
March 2.— J. D. Figgins, "Methods in Making Artificial Flowers and Leaves."

March 9.— Mrs. Agnes L. Roesler, "The Collections Illustrating the Indians of the Plains."

March 16.— R. C. Andrews, "The Local Mammal Collection.— Wild Animals Found About New York."

March 23.— James L. Clark, "Animal Sculpture; How Animals are Mounted."

March 30.— R. W. Miner, "The Jesup Collection of North American Forestry; Our Native Trees."

PUPILS' COURSE.

Mondays, Wednesdays and Fridays, at 4 o'clock.

Open to School Children, when accompanied by their Teachers, and to children of members, on presentation of Membership Tickets.

Monday,	Mar. 9,	Mar. 30.— "New York Colonial Days." By R. W. Miner.
Wednesday,	11,	Apr. 1.— "The Work of Water." By E. O. Hovey.
Friday,	13,	3.— "The Industries of the United States." By G. H. Sherwood.
Monday,	16,	6.— "Life Among Our Indians." By G. H. Pepper.
Wednesday,	18,	8.— "Egypt and Her Neighbors." By Walter Granger.
Friday,	20,	24.— "Methods of Transportation, Past and Present." By H. I. Smith.
Monday,	23,	27.— "Scenes in the British Isles." By R. W. Miner.
Wednesday,	25,	29.— "Life in Our Western States." By Barnum Brown.
Friday,	27,	May 1.— "The Japanese and How They Live." By R. C. Andrews.

PEOPLES' COURSE.

Given in co-operation with the City Department of Education.

The subjects of the lectures to be given in March are as follows:

Tuesdays at 8 P. M. Illustrated with stereopticon views.

March 3.— John B. Creighton, "Our Own City." Modern New York, its growth, commercial interests, social and civic life, and future expansion.

March 10.— Addresses arranged in co-operation with the Conference on the Problems of Congestion of Population, Dr. E. R. L. Gould, presiding:

Hon. Robert W. de Forest, "The Housing Problem." Felix Adler, Ph. D., "Moral Standards and Family Life in Tenements." Hon. Robert Watchorn, "Ellis Island, the Door to the United States." Henry M. Leipziger, LL. D., "The School as a Social Center."

March 17.— Isaac F. Smith, "Literary and Historic Shrines of Boston and Vicinity."

March 24.— S. T. Willis, LL. D., "The Mississippi Valley and the Southern States."

March 31.— John Jay Lewis, "Through the Canadian Rockies."

Saturdays at 8 P. M.

The first four of a course of nine non-technical lectures, on "Achievements of Science and Modern Scholarship," to be delivered by professors in Columbia University. Illustrated with stereopticon views.

March 7.— Professor James Furman Kemp, "Geology."
March 14.— Professor Ernest F. Nichols, "Physics."
March 21.— Professor Edmund B. Wilson, "Biology."
March 28.— Professor Henry E. Crampton, "Zoölogy."

The doors open at 7:30 o'clock and close when the lectures begin.

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and Affiliated Societies are held at the Museum according to the following schedule:

On Monday evenings, The New York Academy of Sciences:

First Mondays, Section of Geology and Mineralogy.
Second Mondays, Section of Biology.
Third Mondays, Section of Astronomy, Physics and Chemistry.
Fourth Mondays, Section of Anthropology and Psychology.

On Tuesday evenings, as announced:

The Linnæan Society, The New York Entomological Society and The Torrey Botanical Club.

On Wednesday evenings, as announced:

The New York Mineralogical Club.

On Friday evenings, as announced:

The New York Microscopical Society.

TRACHODON.

THE GIGANTIC DUCK-BILLED DINOSAUR OF CRETACEOUS TIME

From the group in the Dinosaur Hall. No. 407 of the fourth floor of the building.

The American Museum Journal

Vol. VIII APRIL, 1908 No. 4

THE TRACHODON GROUP.

DINOSAUR remains which are complete enough to put together as articulated skeletons are rare. Among the best preserved of them are bones of members of the Trachodont family. Heretofore, it has been necessary to content ourselves with exhibiting single specimens, except in the case of Allosaurus, which has been mounted as if it were in the act of feeding upon the remains of a Brontosaur. The Museum, however, has recently acquired Trachodon material including two nearly complete skeletons, and these have been mounted together in a group, so that each represents a characteristic attitude of the living animal. The accessories consist of fossil plants belonging to the same period and suggesting the natural surroundings and the food of the animals.

This group takes us back in imagination to the Cretaceous period, more than three millions of years ago, when Trachodonts were among the most numerous of the dinosaurs. Two members of the family are represented here as feeding in the marshes that characterized the period, when one is startled by the approach of a carnivorous dinosaur, Tyrannosaurus, their enemy, and rises on tiptoe to look over the surrounding plants and determine the direction from which it is coming. The other Trachodon, unaware of danger, continues peacefully to crop the foliage. Perhaps the erect member of the group had already had unpleasant experiences with hostile beasts, for a bone of its left hind foot bears three sharp gashes which were made by the teeth of some carnivorous dinosaur.

By thus grouping the skeletons in life-like attitudes, the relation of the different bones can best be shown, but these, of course, are only two of the attitudes commonly taken by the creatures during life. Mechanical and anatomical considerations, especially the long straight shafts of the leg bones, indicate that dinosaurs walked with their limbs straight

under the body rather than in a crawling attitude with the belly close to the ground, as is common among living reptiles.

Trachodonts lived near the close of the Age of Reptiles in the Upper Cretaceous and had a wide geographical distribution, their remains having been found in New Jersey, Mississippi and Alabama, but more commonly in Wyoming, Montana and the Dakotas. A suggestion of the great antiquity of these specimens is given by the fact that since the animals died, layers of rock aggregating many thousand feet in vertical thickness have been slowly deposited along the Atlantic coast.

The bones of the erect specimen are but little crushed, and a clear conception of the proportions of the animal can best be obtained from this specimen. It will be seen that the Trachodon was shaped somewhat like a kangaroo, with short fore legs, long hind legs and a long tail. The fore limbs are reduced indeed to about one sixth the size of the hind limbs, and judging from the size and shape of the foot-bones, the front legs could not have borne much weight. They were probably used in supporting the anterior portion of the body when the creature was feeding, and in aiding it to recover an upright position. The specimen represented as feeding is posed so that the fore legs carry very little of the weight of the body. There are four toes on the front foot, but the thumb is greatly reduced, and the fifth digit, or little finger, is absent.

The hind legs are massive and have three well-developed toes ending in broad hoofs. The pelvis is lightly constructed with bones elongated like those of birds. The long, deep, compressed tail was particularly well adapted for locomotion in the water. It may also have served to balance the creature when standing erect on shore. The broad, expanded lip of bone known as the fourth trochanter, on the inner posterior face of the femur, or thigh bone, was for the attachment of powerful tail muscles similar to those that enable the crocodile to move its tail from side to side with such dexterity. This trochanter is absent from the thigh bones of land-inhabiting dinosaurs with short tails, such as *Stegosaurus* and *Triceratops*. The tail muscles were attached to the vertebræ by numerous rod-like tendons which are preserved in position as fossils on the erect skeleton. Trachodonts are thought to have been expert swimmers. Unlike other dinosaurs their remains are frequently found in rocks that were formed under sea water, probably bordering the shores but nevertheless containing typical sea shells.

The elaborate dental apparatus is such as to show clearly that

Trachodonts were strictly herbivorous creatures. The mouth was expanded to form a broad duck-like bill, which during life was covered with a horny sheath, as in birds and turtles. Each jaw is provided with from 45 to 60 vertical and from 10 to 14 horizontal rows of teeth, so that there were more than 2,000 teeth all together in both jaws.

TRACHODON

Side view of the erect specimen.

Among living saurians, or reptiles, the small South American iguana, *Amblyrhynchus*, may be compared in some respects with the Trachodons, in spite of wide difference in size. These modern saurians live in great numbers on the shores of the Galapagos Islands off the coast of Chile. They swim out to sea in shoals and feed exclusively on sea-weed which grows on the bottom at some distance from shore. The animal swims

with perfect ease and quickness by a serpentine movement of its body and flattened tail, its legs meanwhile being closely pressed to its side and motionless. This is also the method of propulsion of crocodiles when swimming.

The carnivorous or flesh-eating dinosaurs that lived on land, such as *Allosaurus* and *Tyrannosaurus,* were protected from foes by their sharp biting teeth, while the land-living herbivorous forms were provided with defensive horns, as in *Triceratops,* sharp spines as in *Stegosaurus* or were completely armored as in *Ankylosaurus.* Trachodon was not provided with horns, spines or plated armor, but it was sufficiently protected from carnivorous land forms by being able to enter and remain

TRACHODON TAIL

Fragment preserving an impression of the skin.

in the water. Its skin was covered with small raised scales, pentagonal in form on the body and tail, where they were largest, with smaller reticulations over the joints but never overlapping as in snakes or fishes. A Trachodon skeleton was recently found with an impression of the skin surrounding the vertebræ which is so well preserved that it gives even the contour of the tail, as is shown in the illustration on this page.

During the existence of the Trachodonts, the climate of the northern part of North America was much warmer than it is at present, the plant remains indicating a climate for Wyoming and Montana similar to what now prevails in southern California. Palm leaves resembling the pal-

metto of Florida are frequently found in the same rocks with these skeletons. Here occur also such, at present, widely separated trees as the gingko, now native of China, and the *Sequoia*, native of the Pacific coast. Fruits and leaves of the fig tree are also common, but most abundant among the plant remains are the *Equisetæ*, or horsetail rushes, some species of which possibly supplied the Trachodons with food.

Impressions of the more common plants found in the rocks of this

TRACHODON AS IT APPEARED WHEN LIVING.

From a model prepared under the direction of Professor H. F. Osborn by Mr. Charles R. Knight.

period with sections of tree trunks showing the woody structure will be introduced into the group as the ground on which the skeletons stand. In the rivers and bayous of that remote period there also lived many kinds of *Unios*, or fresh-water clams, and other shells, the casts of which are frequently found with Trachodon bones. The fossil trunk of a coniferous tree was found in Wyoming which was filled with groups of wood-boring shells similar to the living Teredo. These also will be introduced in the groundwork.

The skeleton mounted in a feeding posture was one of the principal specimens in the Cope Collection, which, through the generosity of the late President Jesup, was purchased and given to the American Museum in 1899. It was found near the Moreau River, north of the Black Hills, South Dakota, in 1882, by Dr. J. L. Wortman and Mr. R. S. Hill, collectors for Professor Cope. The erect skeleton came from Crooked Creek, Central Montana, and was found by a ranchman, Mr. Oscar Hunter, while riding through the bad lands with a companion in 1904. The specimen was partly exposed, with backbone and ribs united in position. The parts that were weathered out are much lighter in color than the other bones. Their large size caused some discussion between the ranchmen, and to settle the question, Mr. Hunter dismounted and kicked off all the tops of the vertebræ and rib-heads above ground thereby proving by their brittle nature that they were stone and not buffalo bones as the other man contended. The proof was certainly conclusive, but it was extremely exasperating to the subsequent collectors. Another ranchman, Mr. Alfred Sensiba, heard of the find and knowing that it was valuable, "traded" Mr. Hunter a six-shooter for his interest in it. The specimen was purchased from Messrs. Sensiba Brothers and excavated by the American Museum in 1906.

BARNUM BROWN.

THE HEAD OF THE AFRICAN ELEPHANT.

The illustration on the opposite page shows the head of a large African elephant, as it has been mounted by Mr. Herbert Lang at the Museum. The animal, which was of unusual size, was killed by Mr. Richard Tjäder upon the expedition into German East Africa which he undertook in 1906 for the American Museum. When alive, this elephant stood 10 feet 4 inches high at the shoulders and was 22 feet 8 inches long. The tusks are 6 feet 4 inches long and weigh 160 pounds. The specimen has been installed in the East Corridor, second floor (Hall No. 205.) Brief accounts of the Tjäder expedition were published in the JOURNAL for October, 1906, and April, 1907.

57 THE HEAD OF AN AFRICAN ELEPHANT

Obtained by Mr. Richard Tjäder in German East Africa. Installed in the East Corridor, Second Floor.

ETHNOLOGICAL LOAN COLLECTIONS.

Encouraged by the results of the use by the school children throughout the city of the circulating nature study collections, our Department of Anthropology has prepared several series of specimens pertaining to different topics in Ethnology. One of these series illustrates the poem of Hiawatha and thus shows the life of the Ojibwa Indians. This was deposited first in the children's room at the branch of the New York Public Library on Amsterdam Avenue near Eighty-first Street. The collection consists of a cradle-board, an arrow, a flute, rolls of birch bark, cedar-bark fish-line, model of dug-out canoe, war club, mat, invitation-sticks for feasts, stone pipe, tinder, rattle, model showing picture-writing, medicine bag, wooden bowl for gambling dice, wooden cooking dish, bark food dish, wooden spoon and paddle, splint basket, model of snow shoes, busts of Ojibwa youth of the type of Hiawatha, of a Siouan maiden representing Minnehaha, of an Ojibwa warrior with painted face and of an aged Ojibwa woman of the type of Nokomis. The collection is furnished with descriptive labels showing the connection of the objects with the incidents mentioned in the famous poem. Story hours were held each week during the period of the exhibition, and the attendance during six weeks has been about three thousand. The children have shown a great deal of interest in the exhibit, and the circulation of books about Indians has been noticeably increased.

Another of these loan collections is known as "The Arctic Exhibit" and consists of some excellent artist's drawings of the Polar Regions, old prints of explorers, Eskimo garments, hunting, cooking and fishing utensils and other articles. This was first placed in a new branch library at St. George, Staten Island, where it remained for nearly four months, beginning in June, 1907. It was next placed at East 67th Street near Second Avenue, where it was kept from the last week in October until December. The third place of exhibit was at the Hudson Park Branch on the lower west side, where the collection remained for five weeks, beginning Christmas Eve.

A great deal of interest was aroused by this exhibit, as was evidenced by the large attendance at the different libraries, more than five thousand persons, mainly but not exclusively children, visiting each branch for the express purpose of seeing the collection or reading books referred to

in connection with it. For the first few days of the exhibit, there was merely a childish interest displayed in the pictures, bears and sledges, but after a story hour was devoted to a description of Eskimo life, the children seemed to have an intelligent appreciation of the exhibit, and the effect on the circulation of books on the Arctic regions was very marked.

Similar collections have been prepared to illustrate the ordinary life of the Chinese, of the native Filipinos and of the Indians of the northwest coast of America and are ready for distribution.

MUSEUM PUBLICATIONS.

IN addition to Volume XXIII of the Bulletin, noted in the February number of the JOURNAL, the Museum issued a large amount of scientific literature in other forms during the year 1907.

The following Memoirs were published: "Archæology of the Gulf of Georgia and Puget Sound" by Harlan I. Smith; "The Chukchee: Religion" by W. Borgoras; "The Chilcat Blanket" by George T. Emmons, with notes on the blanket designs by Franz Boas.

The concluding part of Volume XV of the Bulletin was published. This consists of a second report on the Eskimo of Baffin Land and Hudson Bay by Professor Franz Boas from notes and material collected by Captain George Comer, Captain James S. Mutch and Rev. E. J. Peck.

Part V of Volume XVII which is devoted to the results of the Huntington California Expedition appeared. This part consists of a description by Professor Roland B. Dixon of the surroundings, material culture, art, social organization and religion of the Shasta Indians, who live in northern California and Oregon.

Part IV of Volume XVIII was issued. In this Professor Alfred L. Kroeber describes at length the religion of the Arapaho Indians, giving the results of studies undertaken in connection with the Mrs. Morris K. Jesup Expedition.

A new series of anthropological papers was begun, and Nos. 1 to 3 of Volume I were issued. They are as follows: "Technique of Some South American Feather-work" by Charles W. Mead, "Some Protective Designs of the Dakota" by Clark Wissler, "Gros Ventre Myths and Tales" by A. L. Kroeber.

ACCESSIONS OF MINERALS.

Some very unusual crystals of Stephanite, the sulphantimonite of silver, have been presented to the Museum collection by Edward L. Dufourcq, M. E. These remarkably large and interesting crystals came from the Las Chispas Mine in Arizpe, State of Sonora, Mexico. They have appeared but recently in collections, and probably all have come from this locality. They seem to be developed in vugs, or cavities, under favorable conditions for crystallization. They probably surpass in size any crystals of Stephanite previously known. They are black, splendent, and twinned like aragonite, that is an orthorhombic crystal presents a pseudo-hexagonal symmetry from interpenetration, twin lamellæ being seen on the basal plane. This species is hemimorphic (*i. e.* the opposite poles are dissimilar) but by supplementary twinning the terminations appear the same. The find is undoubtedly of interest, and a crystallographic study of the crystals has already been made by Professor Moses of the School of Mines, Columbia University, of which Mr. Dufourcq is a graduate. Although perhaps not appealing to the common eye, being black and involved groups, they will elicit very keen admiration from students and collectors. Accompanying this gift was a donation from Mr. Dufourcq of seven well-crystallized and curiously rounded Argentite specimens, the sulphide of silver, and some very instructive examples of wire silver with Polybasite, another sulph-antimonite of silver. It has been often shown that heating silver sulphides with reducing agents, as gas or even vapor of water, will reduce the silver sulphides to metallic threads. It would seem as if some such action had prevailed in the formation of the silver in these specimens. The Stephanite specimens are like those from a neighboring mine that were described by Professor W. E. Ford in the March number of the *American Journal of Science.*

L. P. G.

MUSEUM NEWS NOTES.

AT the annual meeting of the Board of Trustees held February 10, Professor Henry Fairfield Osborn was elected President. Professor Osborn organized the Department of Vertebrate Palæontology in 1891, and under his curatorship, its collection has attained first rank among such series in the world. Since February, 1901, he has filled the office of Second Vice-President of the Board of Trustees.

AT the same meeting Mr. Cleveland H. Dodge was elected Second Vice-President, and Mr. John B. Trevor was made a trustee. President Osborn, Director Bumpus and Dr. Clark Wissler, Curator of the Department of Anthropology, were elected delegates to represent the Museum at the Sixteenth International Congress of Americanists, which is to be held in Vienna in September next.

MESSRS. COURTNEY BRANDRETH and EDWARD L. DUFOURCQ have been elected Life Members on account of gifts to the Museum. Additional Members have been elected as follows: Life Member, AMBROSE ELY VANDERPOEL; Annual Members, J. F. CALDER, MRS. MELBERT B. CARY, LOUIS P. CHURCH, FREDERICK H. KENNARD, W. WILLIS REESE, JOHN E. WHITAKER, ALFRED WILKINSON, D. FAIRFAX BUSH, FRANCIS J. COGSWELL, JAMES B. CLEMENS, M. D., and FRANK D. SKEEL, M. D.

THE Department of Anthropology has recently received an important collection illustrating the ethnology of the Andaman Islands, a little-known group in the Bay of Bengal. This will form the basis of a special article in a later issue of the JOURNAL.

DR. LELAND O. HOWARD, Chief of the Bureau of Entomology, Washington, D. C., gave an illustrated lecture at the Museum Tuesday, February 18, under the auspices of the New York Academy of Sciences. Dr. Howard spoke upon "Some Recent Discoveries in Insect Parastism and the Practical Handling of Parasites" and one of the features of the lecture was a description of studies upon and results as to the extermination of the gypsy moth.

TOGETHER with the remarkable ethnological series from the Caiary

Uaupés River district of South America received by the Museum last summer as the gift of the late President Jesup there came to the Department of Entomology a remarkable collection comprising about 2500 specimens of butterflies, beetles, bees, wasps and other insects. These have been mounted and placed in the cabinet of the Department where they may be inspected any day or during the evening on the first and third Tuesdays of each month, when the rooms are open to the public in connection with the meetings of the New York Entomological Society.

The exhibition showing the congestion of population in New York City which was held at the Museum in March attracted wide attention from the press of the city and the country at large and drew thousands of visitors to the building. The conferences on the various phases of the topic were largely attended and the discussions were participated in by many sociologists and humanitarians.

There has been installed in Hall No. 204, Second Floor, central section of the building, a globe 48 inches in diameter which has been set so that it rotates on its axis by means of clockwork once in twenty-four hours. A search light that takes the place of the sun illuminates the globe and casts the shadow of an index upon it in such a way as to indicate the time of day. This may be compared with the time given upon a clock dial which is likewise connected with the mechanism operating the globe.

The Museum is fortunate in having secured a fine polished and etched section of the Gibeon (Africa) meteoritic iron. The section is 19 by 23 inches in extreme dimensions and shows the Widmanstätten lines characteristic of meteorites in beautiful development. A plaster model of the entire mass was likewise received and forms an instructive addition to the exhibit. The model and section were obtained by exchange from the Natural History Museum in Hamburg, Germany.

Mr. Frank M. Chapman, Curator of Ornithology, left the Museum February 29 for Florida to collect material for the habitat group showing the nesting of the Spoonbill. This bird was formerly abundant but now is on the verge of extinction.

Dr. B. E. Dahlgren of the Department of Invertebrate Zoölogy is in the Bahamas collecting corals and other material for the representation of a coral reef and its life which is to be placed in the Synoptic Hall.

LECTURE ANNOUNCEMENTS.

MEMBERS' COURSE.

Thursday evenings at 8:15 o'clock. Illustrated.

The following lectures remain to be given in this course:

April 2.— Clifton F. Hodge, "The Propagation and Domestication of American Game Birds."

April 9.— O. P. Austin, "Queer Methods of Transportation."

CHILDREN'S COURSE.

Mondays, Wednesdays and Fridays at 4 o'clock P. M.

The following lectures will be given in this course during April:

April 1.— "The Work of Water." By E. O. Hovey.

April 3.— "The Industries of the United States." By G. H. Sherwood.

April 6.— "Life Among Our Indians." By G. H. Pepper.

April 8.— "Egypt and Her Neighbors." By Walter Granger.

April 24.— "Methods of Transportation, Past and Present." By Harlan I. Smith.

April 27.— "Scenes in the British Isles." By R. W. Miner.

April 29.— "Life in Our Western States." By Barnum Brown.

PEOPLE'S COURSE.

The subjects of the lectures to be given in April follows.

Tuesdays at 8 P. M. Illustrated with stereopticon views.

April 7.— "Down the St. Lawrence from Niagara to the Sea." By Edward Justus Parker.

April 14.— "Oklahoma, the Land of Now." By Elias W. Thompson.

April 21.— "Wonderful Washington and Its Metropolis Seattle." By Alfred W. Martin.

April 28.— "Hunting Wolves on Snow Shoes." By James A. Cruikshank.

Saturdays at 8 P. M. By professors in Columbia University.

April 4.— "Botany." By Professor Herbert Maule Richards.

April 11.— "History." By Professor James Harvey Robinson.

April 18.— "Sociology." By Professor Franklin Henry Giddings.

April 25.— "Metaphysics." By Professor F. J. E. Woodbridge.

May 2.— "Ethics." By Professor John Dewey.

These lectures are given in coöperation with the Department of Education of the City of New York. They are open free to the public and no tickets are required for admittance, except in the case of children, who, on account of the regulations of the Department of Education, will be admitted only on presentation of the ticket of a Member of the Museum.

The doors open at 7:30 o'clock and close when the lectures begin.

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and Affiliated Societies are held at the Museum according to the following schedule:

On Monday evenings, The New York Academy of Sciences:

First Mondays, Section of Geology and Mineralogy.
Second Mondays, Section of Biology.
Third Mondays, Section of Astronomy, Physics and Chemistry.
Fourth Mondays, Section of Anthropology and Psychology.

On Tuesday evenings, as announced:

The Linnæan Society, The New York Entomological Society and The Torrey Botanical Club.

On Wednesday evenings, as announced:

The New York Mineralogical Club.

On Friday evenings, as announced:

The New York Microscopical Society.

The American Museum Journal

EDMUND OTIS HOVEY, *Editor.*
FRANK M. CHAPMAN, LOUIS P. GRATACAP, WILLIAM K. GREGORY, *Advisory Board.*

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Frontispiece.

SOUTH AMERICAN "MANAKINS."

From the Bulletin of the Museum, Volume XXIV, Plate XXV.

The American Museum Journal

VOL. VIII MAY, 1908 No. 5

SOUTH AMERICAN "MANAKINS."

THE illustration used as a frontispiece this month is a colored plate from the current volume of the Museum *Bulletin* (Volume XXIV, Plate XXV) used in the description of a new species of bird, *Chiroxiphia napensis*, by Mr. W. Dewitt Miller of the Department of Ornithology. The new form is the lower one on the plate, the upper one being *Chiroxiphia boliviana*, a species described some years ago by Dr. J. A. Allen, Curator of Mammalogy and Ornithology. These birds are natives of South America, where they are known as "Manakins," a loose term applied to several quite different genera. Specimens of the Manakin are on exhibition in the general collection of ornithology in the north hall on the second floor (Hall No. 208).

THE MALARIA MOSQUITO LEAFLET.

THE Museum issued during the past month a Guide Leaflet on the Malaria Mosquito, with numerous illustrations most of which were made from the series of enlarged models that were recently installed in the Synoptic Hall (No. 107 of the Ground floor) or from drawings made from life and other sources in the preparation of the models. The Guide Leaflet is No. 27 in the Museum series and may be obtained at the Museum.

THE USE OF THE CHILCAT BLANKET.

THE Chilcat blanket, many fine examples of which are to be seen in the collections of the Museum, is fast disappearing from among the Tlingit Indians, and of the older specimens, so beautiful in technique, coloring and design, few or none remain, hence it is of

the utmost importance to record pictorially the use of the robe. This is the reason for publishing here a series of photographs taken by the author when cruising in Alaskan waters in early days when aboriginal customs still prevailed.

To-day all has changed, the influx of white settlers, the establishment of missions and schools, and the opportunity to earn a considerable wage in the fisheries and mines have divorced the natives from aboriginal customs, and the rich ceremonial that characterized the life of this region and suggested the use of this robe has disappeared, a truth to which the great empty communal houses that once resounded to the beat of drum and the rhythmic chant of hundreds of voices bear silent witness, in their moss-covered timbers fast falling to decay. So those who have not seen the old life, and those who follow and never can see it, must know of the robe only as a museum specimen hung on the wall or draped over a lay figure.

The primary use of the robe was as a blanket, worn over the shoulders upon dance or ceremonial occasions by both sexes. It was the dress of the Chief, as distinctive of the Northwest Coast as was the eagle feather war bonnet of the Plains. Draped over the shoulders, only the middle of the blanket showed to advantage across the broad of the back, and for this reason the principal figure occupied the central field, and that it might be the more fully displayed, the dancer often entered the house of entertainment backwards and so danced to his place among the performers. With the accumulation of property and the increased number of blankets, almost every household possessed one or more, which were in the keeping of the head of the family and were carefully preserved with the other totemic emblems in great cedar chests.

The sleeveless shirt, which was similar in material, weave and character to the blanket, was worn by the men only, and was rare. While some show an extremely conventionalized design in which the characteristic features of the animal are accentuated, and the minor parts are represented more as ornaments, placed at the fancy of the artist and difficult of recognition, the majority are distinguished by their realism, in which the figure is outlined with its members occupying relatively natural positions, although the more prominent features are often exaggerated. The front of this dress being the ornamental part, the wearer always faces the audience.

When death approaches and the spirits of those who have gone before

67 Emmons, Photo.

YEHLH GOU-OU.

Emmons, Photo.

DAUGHTER OF CHARTRICH

68 Emmons, Photo.

THREE CHILCAT CHIEFS.

Emmons, Photo.

JOE-KENNEL-KU.

return to whisper words of comfort and assurance to the sick, he is carefully dressed for the final journey, and occupies the place of honor opposite to the doorway, while around him are laid the family head-dresses, robes and totemic emblems and nearby the blankets.

After death, during the four-day period of mourning, when the corpse is seated in state, the blanket serves the purpose of a shroud. When cremation has been accomplished and the ashes have been collected and deposited in the grave house, the blanket may be hung on the outside as a token of honor to his memory; and here, the sport of the elements, it finally disintegrates and disappears.

The photographs used in illustrating this brief note require more explanation than can be placed beneath the figures. All were taken by the author in the early eighties, while the blankets and shirts were still in common use among the Chilcat. The figure at the left on page 67 is of Yehlh Gou-ou, chief of the Kon-nah-ta-tee family, in his family blanket which bears a totemic design. The weaver having no knowledge of perspective, the representation of the emblematic animal is much conventionalized. All the parts of the animal are represented, though the members have been separated from their fellows and so distorted in order to meet the demands of the pattern that they are recognizable only by an expert. The right hand figure shows the daughter of Chartrich, the chief of the Kar-qwan-ton family of the Chilcat tribe, dressed in the family robe bearing the brown bear as its emblem. She wears a hat made of spruce root and has around her shoulders the rope girdle made of the inner bark of the red cedar which is often used to keep the blanket in place.

Page 68 presents at the left a group of three Chilcat chiefs of the Kar-qwan-ton family who were met at Kluck-wan village. All wear the cedar-bark girdles around their shoulders and have on their heads hats of ceremonial significance. The other figure on page 68 is of Joe-Kennel-Ku, chief of the Da-she-ton family of the Hootz-ah-tar tribe, dressed in the rare sleeveless shirt of blanket work which was worn only by men. The emblem is the beaver. The chief's totemic hat is particularly noteworthy.

Page 71 is devoted to pictures of Kitch-Kook and Cou-de-nah-haw. Kitch-Kook is the chief of the Kuse-ka-dee or more properly the Kharse-ka-dee or Kharse-hit-ton family of the Sitka tribe. He is shown in his family sleeveless shirt of elaborate blanket work bearing the family

emblem, the bison. The traditions of this family go back to a home in the interior where the bison was found in abundance. In their ceremonial designs the animal is represented as standing. The head is placed at the top, with the body below. The forefeet are on either side of the jaw, the hind feet in the lower corners, the "eyes" just above the hind feet represent the hip-joints. The man wears on his head an elaborate shaman's, or chief's, head-dress and has a shaman's rattle in his right hand. Cou-de-nah-haw, a chief of the Kar-qwan-ton family, is standing beside one of the old native houses made of hewn logs. His sleeveless shirt shows his family emblem to be the brown bear.

The illustration on page 72 shows the final use of the blanket in the ancient Chilcat culture. The most precious article in the wardrobe of the chief, it was placed on the front of his grave house after his death, as is represented in this view in 1885 upon the banks of the Chilcat River.

George T. Emmons.

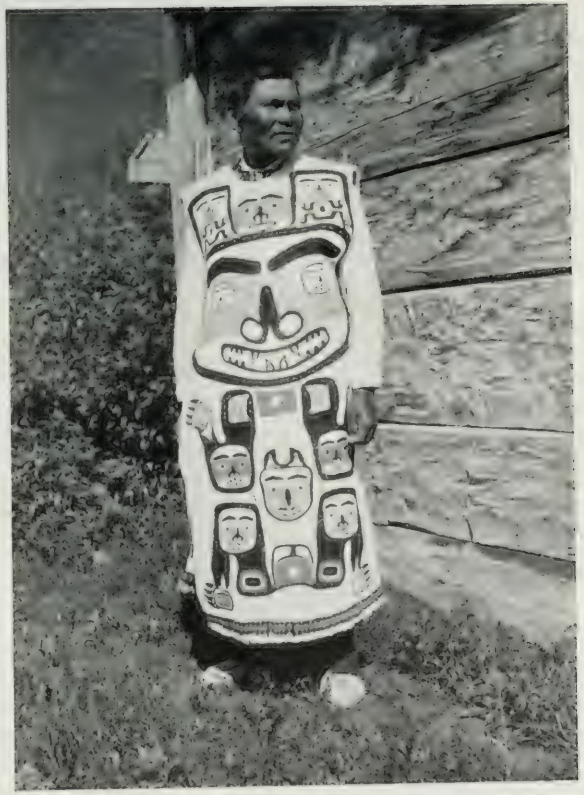
NEW MATERIAL FROM THE CONGO FREE STATE.

THE Museum has recently received an additional assortment of material from the Congo Free State. The new shipment contains a considerable number of specimens not found in the old collections. To the representative series of Congo musical instruments there are now added a large xylophone with gourd resonators, a zither, some marimbas (native pianos) with bamboo keys, and a beautifully polished ivory horn with incised ornamentation. There is a fine set of fetich figures, some of phallic character, and a valuable shaman's mask with upturned proboscis. The industrial arts are represented by decorated earthenware, masterly specimens of Bakuba woodwork and baskets and feather-caps of an astonishingly complex manner of weaving. Bark boxes from the northern section of the State have original lids of carved human heads. The military equipment of the natives is illustrated by three cuirasses of pachyderm hide and a series of shields representing various types of manufacture. Some highly ornamental adzes were used as insignia of native royalty, and there are also some carved sticks which served as badges of distinction.

71

Emmons, Photo,

KITCH-KOOK



Emmons, Photo,

ÇOU-DE-NAH-HAW

Emmons, Photo.

GRAVE HOUSE OF A CHILCAT CHIEF

PAINTINGS OF MT. PELÉ.

THE Museum is fortunate in having secured as a loan exhibit the series of eight paintings of Mt. Pelé, Martinique, made by the late Professor Angelo Heilprin of the Philadelphia Academy of Natural Sciences and Yale University, who was one of the leading geographers of the country. Professor Heilprin visited Martinique during the great eruptions of 1902 and 1903, first as the delegate of the National Geographic Society and afterward on his own account. The paintings now at the Museum were made from sketches, photographs and other studies in the field and are valuable not only from an artistic point of view, but also from their giving a record of the impressions of an observer who was a scientist as well as an artist.

The paintings have been installed in the lobby of the central hall (No. 204) of the second floor and will be of interest to those who have known Professor Heilprin personally and through the medium of his vivid printed and oral descriptions of the tragedy of Martinique that resulted from the most interesting as well as one of the most destructive volcanic eruptions of historic times.

PRESERVED TATTOOED HEADS OF THE MAORI OF NEW ZEALAND.

WHEN Captain Cook published the account of his famous first voyage around the world, which was made in 1768–1771, he described the forms of skin-decoration which he found in vogue among the natives of the South Sea Islands. Europeans had never before heard of such practices and were correspondingly astonished. Cook's rendering of the native term for the process and the result was "amoco," a word that is now written "moko." The decoration is more commonly known to us, however, as "tattooing."

The most remarkable work was found among the Maori of New Zealand and the preserved tattooed heads of the chiefs and other prominent men finally commanded such a price among souvenir collectors that many murders were committed for the sake of the heads, and in 1831 the government of Sydney, Australia, then in control over New

Zealand, prohibited the trade in Maori heads. The practice of tattooing gradually died and more than a generation has passed since it ceased to exist. The heads are now extremely scarce, hence the Museum considered itself particularly fortunate in securing last June, as noted in the October JOURNAL, the famous Robley collection. The collection comes as the gift of the late President Jesup.

Major-General G. Robley of the British army, who made a close study of the subject of tattooing while he was making his collection, states that the old-time Maori tattooer took an artist's pride in his work,

TATTOOED MAORI HEADS FROM NEW ZEALAND.

and the result, not being easily accomplished, was highly prized when completed. As may be seen from the photographs reproduced on this page the designs are intricate and really beautiful, and the skill of the artist must have been great to reproduce them with such accuracy on the uneven surface of the human face, particularly in view of the extremely tedious and painful process that was employed.

The tools used, which are represented in the collection, were narrow comb-shaped chisels made from the wing-bone of a sea-bird. The chisel was driven by tapping with a little mallet quite through the skin.

Then the tattooer rubbed into the wound a pigment made from the powdered charred resin of the "kauri" or "rimu" tree. This process left deep blue-black grooves with raised borders, and is entirely different from the method common in other parts of the world, in which needles are used and the skin left smooth. After the advent of white men in the South Seas, iron chisels took the place of the bone tools and the tattooers produced finer tracery, while the furrows left were not so deep. The illustration on this page shows two of the ancient chisels and one of

MAORI TATTOOING CHISELS AND FEEDING FUNNEL.

the carved wooden funnels that were used in feeding a man while his face was swollen by the wounds due to the tattooing.

According to General Robley, only the heads of prominent men were preserved after death. The principal object was to keep alive the memory of the dead, either of great friends or powerful enemies, and the "moko mokai," as they were called, supplied the place of statues and monumental records. In the case of a departed chieftain, his preserved

head was a visible sign that in some mysterious way his spirit was still present among his people.

The old embalming consisted in the removal of all the interior of the head and drying in smoke after a careful steaming or even baking. The form and features were fairly kept, and the identity of the deceased was easily recognized, for the tattooing kept its place exactly on the face. A few heads retain the original eyes or have been provided with false ones; but usually the eyes of the slain were gouged out and swallowed by the victorious warrior that he might absorb the spirit of the enemy, and the eyelids were closed, since the Maori thought that they were in danger of being bewitched, if they looked into the empty orbits.

The collection is on exhibition in a case on the south side of the Peruvian Hall (No. 302 of the gallery floor).

MUSEUM NEWS NOTES.

THE MUSEUM has received through gift by C. H. Senff, Esq., a rare and valuable collection consisting of more than one hundred specimens of old Filipino knives, swords, spears, daggers, battle axes and other weapons which were collected some years ago by Capt. C. B. Hagadorn, U. S. A. This forms a most welcome addition to our ethnological series.

SINCE our last issue the following members have been elected: Life Member, Mr. ALFRED G. DALE. Annual Members, Messrs. FRANK I. COBB, GEORGE F. CANFIELD, RICHARD S. FRENCH, G. A. CRAYEN, AUGUST LEWIS and CHARLES MARTIN CLARK and Mrs. OGDEN CODMAN.

AMONG the expeditions which are in the field or are about to go out either wholly or in part for the American Museum, mention may be made of the following:

THE DEPARTMENT of Vertebrate Palæontology will continue its explorations in the Permian of Texas, in charge of Dr. E. C. Case; in the Cretaceous of Montana, in charge of Mr. Barnum Brown; in the Eocene of Wyoming, in charge of Mr. Walter Granger, and in the

Miocene of Nebraska, in charge of Dr. W. D. Matthew and Mr. Albert Thomson.

Mr. Frank M. Chapman, Curator of Ornithology, and the bird artist, Mr. L. A. Fuertes, are in Florida collecting material for the habitat groups illustrating the Spoon-bill and the Ivory-billed Woodpecker, as was noted in the April Journal.

Mr. Roy C. Andrews of the Department of Mammalogy has gone to Vancouver Island for the purpose of spending several months at the whaling stations on that coast. His work will be the securing of photographs, notes and measurements, which will furnish the data for a preliminary study of the Pacific species of whales. The entire scientific knowledge of these forms rests on the observations of Captain Scammon, made more than thirty years ago, which have never been verified. If conditions are favorable, an endeavor will also be made to add several skeletons of the Pacific whales to the Museum collection of Cetacea.

Hon. Mason Mitchell, from whom we have already received valuable material, as noted in the Journal, continues to act for us as a volunteer collector of mammals in northern China.

Mr. Arthur DeCarle Sowerby of Tai-Yuan-Fu, Shansi, China, has started upon a journey of at least six months' duration through eastern Asia, in the course of which he will collect small mammals for our Department of Mammalogy.

Col. A. E. Ward of the British Army is collecting birds and small mammals for this Museum gratuitously in Kashmir. Col. Ward has already sent us one shipment of specimens all of which were new to our collections.

Captain B. D. Cleveland of New Bedford, Mass., is soon to start upon a sealing and whaling expedition to the Antarctic Seas. He has been commissioned to procure for the Museum seals, whales, penguins and other animals making their home in and around those waters.

Captain M. L. Crimmins, U. S. A., is collecting small mammals and birds for us in the Western States as a volunteer assistant.

Mr. William Richardson of Matagalpa, Nicaragua, is collecting mammals and birds in that region for the Museum. He has sent in some valuable material including specimens of the harpy eagle, the otter, the brocket deer and many rare carnivores and rodents.

For the Department of Anthropology, Mr. Harlan I. Smith will continue in Wyoming and Idaho the archæological research which he began last year; Dr. R. H. Lowie leaves New York this month for the Mackenzie River region north of Lake Athabasca, where he will begin anthropological studies among the Athabascan tribes, and during the latter part of the season he will continue work already begun among the Northern Plains Indians of the United States; Mr. Alanson Skinner will collect anthropological data and specimens in the James Bay region of Canada, and, particularly, among the Indian tribes of Labrador; Mr. Gilbert L. Wilson takes up anthropological work among the Mandan and Hidatsa Indians of North Dakota; Dr. J. R. Walker is devoting his time to the study of special points in the ethnology of the Dakota Indians, chiefly on Pine Ridge Reservation, and Professor Howard Richards is in China gathering anthropological material.

Hon. Hugh M. Smith of Washington, D. C., is doing volunteer collecting of anthropological material in the Philippine Islands for us in connection with the biological survey of the group which has been undertaken by the Bureau of Fisheries of the Department of Commerce and Labor.

Captain George Comer is continuing his valuable work among the Eskimo of the Hudson Bay region, whence he has already brought the Museum much important material.

Mr. V. Stefánsson, the Arctic explorer, together with Mr. R. M. Anderson, left New York about the middle of April for an expedition down the Mackenzie River to its mouth and eastward along the coast of the Arctic Ocean. Mr. Stefánsson will study the ethnology of the Eskimo tribes inhabiting the region, and Mr. Anderson will make zoölogical studies and collections along the route traversed.

Mr. G. A. McTavish is collecting anthropological material and insects in Tahiti and Mr. W. H. R. Rivers, an English anthropologist,

is gathering anthropological material and data for us in the other islands of the Society group.

Dr. B. E. Dahlgren and Mr. Hermann Müller of the Department of Invertebrate Zoölogy are in the Bahamas collecting material and making studies for the reproduction of a coral reef with its associated molluscan and other life.

Dr. E. O. Hovey, Associate Curator of Geology, left New York on April 16 for the West Indies to continue his studies for the Museum upon the volcanoes of the Lesser Antilles. He will devote particular attention to Mt. Pelé of Martinique and the Soufrière of St. Vincent, in order to learn the changes which have taken place since the violent eruptions of 1902 and 1903.

Mr. E. P. Van Duzee of Buffalo is in Florida collecting insects for our Department of Entomology. He will visit Georgia for the same purpose before returning to New York.

*

The exhibition showing the congestion of population in New York City was so popular that it was continued for a week beyond the original period planned for it and closed on March 29 with an attendance of 41,589 visitors to its credit during the three weeks that it was open.

The Eastern Art Teachers' Association will hold its convention and exhibition in the auditorium and adjoining corridor from May 14 to 16 inclusive.

The next number of the Journal will be that for October, 1908.

MEETINGS OF SOCIETIES.

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On Wednesday evenings, as announced:

The New York Mineralogical Club.

On Friday evenings, as announced:

The New York Microscopical Society.

On Saturday afternoons, as announced:

Field excursions of the Torrey Botanical Club and the New York Mineralogical Club.

The programs of the meetings of the respective organizations are published in the weekly *Bulletin* of the New York Academy of Sciences and sent to the members of the several societies. Members of the Museum on making request of the Director will be provided with the *Bulletin* as issued.

During the summer, the meetings of the Societies will be discontinued except for the field excursions, special notice of which will be sent to the members of the several societies providing for them.

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82 CORAL REEF OFF LITTLE GOLDING CAY.

At extreme low tide the top of the reef becomes visible for a short time. The swell which continually breaks over the reef serves to keep the coral polyps from being killed by exposure to the air and sun.

The American Museum Journal

Vol. VIII OCTOBER, 1908 No. 6

TO THE BAHAMAS FOR CORALS.

As noted in the April Journal, Dr. B. E. Dahlgren and Mr. H. Müller of the Department of Invertebrate Zoölogy were sent to the Bahamas last spring to study the marine life of those islands and to collect material for the reproduction at the Museum of a

AMERICAN MUSEUM EXPEDITION TO THE BAHAMAS.
The schooner "Astarte" at anchor inside the coral reef.

coral reef with all its richly varied fauna. The expedition left New York in March and returned about the end of May with many choice specimens. Permission to collect was readily granted by the Bahaman government, and the governor, Sir Edward Grey-Wilson, and the officials in general extended every possible courtesy to our representatives. The account of the trip may be given in Dr. Dahlgren's own words:

"A small schooner, a regulation 'sponger' was secured for the work on the reef, the owner, Mr. J. Kemp, a local collector and dealer in corals, serving as captain, and a week after leaving New York we sailed from Nassau for Andros Island. Reaching Mangrove Cay on the following evening, we were warmly received by Rev. Mr. F. B. Matthews, Rector of All Saints, who has repeatedly shown himself an active and valuable friend of the Museum. On the present occasion he not only offered his study and magistrate's court to the expedition for use as a

MADREPORE CORAL

A large specimen on the beach at Staniard Rock, Andros, after being floated from the place where it was found.

laboratory, but, since he was on the point of leaving for a trip to Europe, he put the rectory as well at our disposal. Headquarters were thus established within a few miles of the point where we desired to work, an arrangement which was very economical of time.

"The reef which stretches along the whole hundred miles of the eastern coast of Andros is particularly luxuriant in development at points near the channels or 'bights' which divide the island into three main portions. At Little Golding Cay off Middle Bight, for example, a

85 MADREPORE CORALS ON THE OUTERMOST EDGE OF THE REEF OFF LITTLE GOLDING CAY.

magnificent coral reef rises out of deep water to the very surface, so that at low tide it is possible to walk about on its upper dead portions. At

LIVING REEF-CORALS OFF LITTLE GOLDING CAY.

Seen from above through the water. Photographed with the help of a water glass.

the time of 'spring tides,' when the water falls lower than usual, even the living portions of the top of the reef become visible, being laid bare for a moment at a time by the passage of the waves which sweep over the reef.

"Day after day we anchored in the comparatively shallow channel separating the reef from the main island. Rough weather interfered so much with our work that on only two occasions during the month that we staid there was it possible for our rowboats to reach the outermost portions of the reef, still we were, in time, able to survey the whole of the reef at Little Golding Cay and to form a rather definite conception of its structure and the succession of life zones of the various forms of madreporarian corals by which it is built. Excellent photographs were secured of the exposed portions of the reef, and we were even fortunate enough to obtain through the water some views of the inner and outer submerged slopes. The low scattered fringing reef which extends southward from Little Golding Cay was explored for ten miles, as well as weather conditions would permit. Our collecting in the meantime progressed so well that at the end of the month we were able to send the schooner off to Nassau to unload.

"During the ten days while our boat was absent, portions of the coast and the bights and creeks afforded good collecting, and a fairly representative collection was made of marine invertebrates of the littoral zone. After the return of our vessel, this time a larger sponger, the first one having sprung a leak, weather conditions were still more unfavorable, and our work on the reef was interrupted for days at a time. At Middle and South Bights some large pieces of coral were secured, and smaller ones, from which color sketches of the various species were made, were collected daily.

"One of the numerous 'ocean holes' near-by was visited. These are caverns or hollows in the bottom of the sea. Their sides, as far as visible, are lined with wonderful growths of coral, and their waters are alive with many-colored fishes. They have their counterparts on land in the holes and caves which everywhere perforate the æolian limestone of which the islands consist.

"As soon as we were satisfied that a sufficient amount of material had been obtained for the construction of a coral-reef group, our remaining collections were packed and put on board the vessel. The return was made by way of Wood Cay and High Cay, where we had hoped to obtain specimens, but at both places rain and wind storms effectively prevented any work. The packing and shipping of our now rather extensive material occupied about ten days after our return to Nassau, and then Mr. Müller sailed for New York.

"I stayed behind in the hope of securing, if possible, near Nassau a specimen of Madrepore like the huge ones that we had found on the outer margin of the Andros reef, but which there baffled all our efforts at collecting. Captain J. Slocum, who some years ago became known through sailing alone around the world in his fifteen-ton yawl, the 'Spray,' was fortunately in Nassau at the time with this boat. His co-operation was secured, and in a few days a specimen of the desired kind was found.

"Several days of hard work with crowbars and spars were needed to dislodge the mass from the reef, but then it was easily floated by means of empty casks onto the beach at high tide. After a preliminary cleaning it was crated and hoisted on board the 'Spray,' and was landed at West 79th Street pier two weeks later. I returned by way of Nassau to New York."

The series of Bahaman sponges, echinoderms, annelids and mollusks brought back by this expedition constitutes a substantial addition to the collections of the Department of Invertebrate Zoölogy. From the material several small groups will be prepared, but the major portion of the corals will, as soon as practicable, be assembled in the form of a large group to exhibit in a somewhat condensed form the character of a typical West Indian coral reef.

MUSEUM NEWS NOTES.

DR. W. D. MATTHEW, Associate Curator of Vertebrate Palæontology, returned from the field in August with a gratifying report of the work accomplished during the summer. The investigations of his party were confined mainly to the Miocene beds of Sioux County, Nebraska. Much interesting material was collected from the Lower Miocene in the vicinity of Agate, while farther south, Dr. Matthew and Mr. Harold Cook, who accompanied him, discovered two new fossil-bearing levels from which were obtained collections particularly rich in fossil remains of the Horse. Several incomplete skeletons of the Middle Miocene horses have been secured, together with abundant fragmentary material from a higher level, which may prove to represent a new and large fauna that hitherto has been very little known.

Since our last issue the following persons have been elected to Membership in the Museum: Fellow, Mr. Charles H. Senff; Life Members, Mr. William Buckman and Dr. Theodore Dunham; Annual Members, Messrs. F. A. Coffin, C. L. Colton, M. Delano, R. H. Halsey and T. W. E. de Lemos and Mrs. G. G. Williams.

In the Dinosaur Hall (No. 407 of the Fourth Floor) the Trachodon group described in the April number of the Journal has been completed by the addition of the second skeleton and by the insertion in the base of fossils and models showing the shells and plants belonging to a mud flat of the period (Cretaceous) when the animals lived, together with fossil leaves of trees growing along the bordering mainland. Several beautiful transparencies representing the Cretaceous Bad Lands and the Triassic and Jurassic bluffs in Montana and Wyoming from which have been obtained many of the dinosaur remains making up the exhibitions in the hall have been placed in the east windows.

In the Hall of Fossil Mammals (No. 406 of the Fourth Floor) several important additions and changes have been made during the past few months. A specimen of the four-toed horse (*Orohippus osbornianus* Cope) from the Middle Eocene beds of the Bridger Basin, Wyoming, has been placed on exhibition. This was a small animal of about the same size as its ancestor in the Lower Eocene beds. It had four toes in the fore feet and three in the hind feet, but there are no vestiges of the fourth toe remaining. Last year's expedition to Egypt is brought to mind by an exhibit consisting of the skull and lower jaws of the Horned Arsinoithere. This gives one too some hint of the strange appearance of one of the animals inhabiting northeastern Africa in Upper Eocene time. The large skeleton of the great Sabre-Tooth Tiger, *Smilodon*, from the Pleistocene beds of South America has been put into a case by itself, in which is also exhibited an oil painting by Charles R. Knight representing the animal as it is supposed to have appeared in life. There has been placed in the Amblypod Alcove at the west entrance to the hall a splendid composite skeleton of Uintatherium. This was a huge four-toed, elephantine, hoofed animal with large dagger-like tusks.

Dr. Edmund Otis Hovey, Associate Curator of Geology, who visited the West Indies for the Museum immediately after the eruptions of Mt. Pelé and the Soufrière in 1902, and went again in 1903, made a third

expedition to the islands last spring and summer. The principal points visited were the islands of Martinique, St. Vincent, Guadeloupe, Grenada and Barbados, in all of which collections were made supplementary to those previously obtained. Dr. Hovey was particularly fortunate in securing photographs showing the changes which have taken place during the last five years in both of the active volcanoes, having camped out on Mt. Pelé for ten days and on the Soufrière for five days. Temperature observations of the fumaroles were made, including pyrometer observations on the high-temperature vents of the summit of the new cone of Pelé, where a heat of at least 959° F. was found. No dust or débris is being discharged at Pelé, although there is abundant and vigorous steam action. The Soufrière of St. Vincent is absolutely quiet. The bottom of the crater is now occupied by a beautiful lake, which is apparently about as large as that for which the volcano was famous before the eruptions of 1902–03. Many interesting data were obtained regarding the extent of erosion and the advance of vegetation and cultivation in the devastated areas of Martinique and St. Vincent.

THE exhibit from Mt. Pelé, Martinique, has been enriched by the addition of glass, silver and other articles from St. Pierre which were melted or softened or otherwise affected by the heat of the burning city at the time of the first great eruption. Some of these have been placed with the exhibition of Heilprin paintings in the lobby of the central hall (No. 204) of the Main Floor, and others have been put with the principal Pelé exhibit in the Hall of Geology (No. 408 of the Fourth Floor). Some colored transparencies of the mountain have been installed in the stairway between the Third and Fourth Floors.

THE Museum was the headquarters of the Second Annual Congress of the Playground Association of America during its session in New York from September 8–12. The Association was founded with the object of showing that properly supervised playgrounds help to produce good citizens, and endeavors to "interest every American city in playgrounds and in a study of possible playground sites; then to co-operate in starting the work of providing them."

THERE has just been added to the collection of Cetaceans in the East Mammal Hall (No. 306) of the Gallery Floor, a full-size model

of the Black Fish, or Pilot Whale, made from a cast taken from the actual specimen by the Boston Society of Natural History. This animal is still common in North Atlantic waters. There have also been put on exhibition small models of the Right Whale, made from the whale caught at Amagansett, L. I., in February of last year and the Humpback Whale, and a small model of the head of the Sulphurbottom Whale showing the position of the whalebone and the way in which the animal opens its mouth.

The case containing representatives of the large members of the Cat Family has been entirely re-arranged and made more effective in its installation and now includes the mounted specimen of the Carnegie lion which was described and illustrated in the Journal for March, 1907.

In the East Mammal Hall of the Second Floor (No. 207) there have been installed seven panels of heads of the big game and other trophies collected by Mr. John R. Bradley of New York and deposited with the Museum. The heads are fine examples of the large mammals of America, Asia and Africa and represent a wide range of species.

The Museum has recently received on deposit from the estate of Commodore Lawrence Kearny, U. S. N., a valuable feather cape from the island of Hawaii that was given to him by King Kamehameha III, on the occasion of the commodore's visit to Honolulu in 1843 on a diplomatic errand from the American government.

Within the past few months several important collections and individual specimens have been received by the Department of Anthropology. Among these particular mention should be made of a series of about 6,000 objects illustrating the archæology of the State of New York which comes as a gift from Henry Booth, Esq., of Poughkeepsie. This collection contains implements and utensils of stone, bone, shell and pottery showing the culture of the prehistoric peoples and a number of skulls and skeletons. From Mr. M. F. Savage have been received a remarkably fine spear and paddle from Hawaii and an iron tobacco pipe inlaid with gold from Manchuria. T. MacGregor MacDonald, Esq., of Wallilabo, St. Vincent, B. W. I., has presented a Carib stone axe and a stone for grinding stone implements from the island of St.

Vincent. The axe is of the "fish" pattern and is one of the largest examples of this form known. By exchange with the Museo Ethnografico of Buenos Aires the Department has obtained a collection of pottery and wooden objects illustrating the archæology of the Province of Salta, Valley of Calchaqui, Argentina. From the Carnegie Museum of Pittsburgh has come, likewise through exchange, a series of 600 pieces of ancient pottery from Costa Rica and a small collection, including three very large earthenware jars, from Colombia. Mr. C. C. Vinton has sent in an extensive ethnological collection from Korea, obtained on a Museum expedition.

Two relief maps of North America have been placed with the Bison group showing by means of dots of different colors the former wide range and abundance of the animal and its present meagre distribution or practical extermination.

The exhibit in the Central Hall of the Second Floor which shows the time of day and the change of seasons has been modified and amplified so that now the four-foot globe representing the earth not only turns upon its axis once in twenty-four hours but also is made to revolve around the sun once a year with its proper motion and in its correct position. The light of the sun is represented by an electric stereopticon which casts a noon mark on the globe by means of the shadow of a line. This shadow at the same time shows the mean time for the longitude of New York City by means of subdivisions upon the equator. This exhibit has awakened a great deal of interest and is instructive in many ways additional to those mentioned.

The exhibit on the ground floor illustrating the solar system has been altered so as to be more comprehensive and instructive. The sun is now represented by an illuminated globe three inches in diameter, which brings the orbit of the earth just within the Foyer. The Foyer therefore now contains the whole of the orbits of Mercury, Venus and the Earth and part of that of Mars, while the adjoining exhibition halls contain the remainder of the orbits of Mars and parts of those of Jupiter and Saturn. The orbits are represented by circles of wire on which the days and months are indicated and along which the planets, shown as lights of proper size, are moved from day to day in correct position. This

installation demonstrates graphically and on a satisfactory scale the relative positions of the members of the solar system as far as Mars on the day of observation, gives the morning and evening stars on that day and the reasons for their being such and illustrates other facts in astronomy that often are obscure to most people.

Dr. Robert H. Lowie returned to the Museum September 4, from an extended ethnological trip to the Northwest. He left New York on May 5 to visit the Chipewyan Indians, residing on Lake Athabaska in the northernmost part of the province of Alberta, Canada. Dr. Lowie secured notes on the industrial life and mythological conceptions of these Indians and took many photographs illustrating their physical types. On the way back to New York, he spent four weeks in Montana, where he continued his studies of the ethnology of the Assiniboine.

There has recently been installed in the American Indian Hall (No. 102 of the First Floor) a valuable loan exhibit of paintings and sketches of Chippewa Indians which were made from life by the noted portrait painter, the late Eastman Johnson, while on an expedition through the Middle West in 1856 and 1857.

The results of the expedition to James Bay and vicinity by Mr. Alanson Skinner, of the Department of Anthropology, are most important in that he obtained not only interesting ethnological material from the Cree Indians, but also much new and valuable information regarding their religious and social customs. The Cree are essentially hunters, and the complete set of specimens brought back by this expedition will add much to the ethnological interest of the collections already installed in our halls. An attempt to study the Naskapi, a little-known tribe formerly frequenting the east coast of Hudson Bay, was fruitless, since the Indians now remain in the country bordering the Atlantic. Mr. Skinner and his party traveled more than a thousand miles in an 18-foot canoe, had many thrilling experiences and narrowly escaped starvation while returning through the forests of northern Canada. A full account of the expedition and its results is reserved for a future number of the Journal.

A recent letter from Mr. V. Stefánsson, who, with Mr. R. M. Anderson, left New York City in April on an expedition to the mouth

of the Mackenzie River and the adjacent country, under the auspices of this Museum and the Geological Survey of Canada, reports the successful arrival of the party at Smith's Landing on the Slave River, from which point they were planning to push on to MacPherson in time to make connections with the mail leaving there about the middle of July. The expedition was organized for the purpose of making scientific studies of the Eskimo of the country, of procuring as exhaustive collections as possible illustrating not only the material cultures of the uncivilized tribes of the region, but also the zoölogical conditions which prevail there, and of increasing our knowledge of the geological formations of that portion of the world. The expedition will begin its return journey during the summer of 1909.

Mr. Roy C. Andrews, of the Department of Mammalogy, returned to the Museum September 10 after spending several months among the whaling stations of Vancouver Island and vicinity. He reports that he has secured a fine skeleton of a Humpback Whale, together with a complete set of baleen. He measured, photographed and took full descriptive notes upon more than seventy five whales representing four species, paying particular attention to their external and osteological characters with a view to showing individual variation. There being a scarcity of Sulphurbottom Whales at Victoria, B. C., Mr. Andrews went to Kyuquot, on the other side of Vancouver Island, where he studied not only these animals but also an exceptionally large Sperm Whale. Before returning to the Museum he visited Admiralty Island, Alaska, where Finback Whales were so plentiful that he saw 200 of them in one school.

During his recent trip to Florida, Mr. Chapman secured a series of moving pictures of pelicans on Pelican Island, showing the habits of the birds during the nesting period. These pictures will be of particular interest, as evidencing the results of the protection which has been accorded the birds for the past five years.

LECTURE ANNOUNCEMENTS.

MEMBERS' COURSE.

The first course of lectures for the season 1908–1909 to Members of the Museum and persons holding complimentary tickets given them by Members will be given in November and December.

PUPILS' COURSE.

The lectures to Public School children will be resumed in October.

PEOPLE'S COURSE.

Given in coöperation with the City Department of Education.

Saturday evenings at 8 o'clock. Doors open at 7:30.

Professor Charles Baskerville, of the College of the City of New York,— a course of six illustrated lectures on chemistry.

October 3.— "Hydrogen and Oxygen."
October 10.— "Carbon and Its Compounds."
October 17.— "Nitrogen and Its Compounds."
October 24.— "Sulphur and Its Compounds."
October 31.— "Phosphorus and Its Compounds."
November 7.— "Sodium, Potassium and Calcium, and Their Compounds."

Tuesday evenings at 8 o'clock. Doors open at 7:30.

October 6.— Mr. and Mrs. William B. Humphrey, "The Songs and Basketry of the North American Indians." Illustrated by songs and specimens.

October 13.— Mr. Kenneth Bruce, "The Historic Hudson." Illustrated by stereopticon views.

October 20.— Mr. Frederick M. Brooks, "Alaska of To-day." Illustrated by stereopticon views.

October 27.— Professor Philander P. Claxton, of the University of Tennessee, "The New South."

Children are not admitted to these lectures, except on presentation of a Museum Member's Card.

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and Affiliated Societies are held at the Museum according to the following schedule:

On Monday evenings, The New York Academy of Sciences:

First Mondays, Section of Geology and Mineralogy.
Second Mondays, Section of Biology.
Third Mondays, Section of Astronomy, Physics and Chemistry.
Fourth Mondays, Section of Anthropology and Psychology.

On Tuesday evenings, as announced:

The Linnæan Society, The New York Entomological Society and The Torrey Botanical Club.

On Wednesday evenings, as announced:

The New York Mineralogical Club.

On Friday evenings, as announced:

The New York Microscopical Society.

The programmes of the meetings of the respective organizations are published in the weekly *Bulletin* of the New York Academy of Sciences and sent to the members of the several societies. Members of the Museum on making request of the Director will be provided with the *Bulletin* as issued.

The American Museum Journal

Edmund Otis Hovey, *Editor.*
Frank M. Chapman, Louis P. Gratacap, William K. Gregory, } *Advisory Board.*

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LOUISIANA HERON IN CUTHBERT ROOKERY.

The American Museum Journal

Vol. VIII NOVEMBER, 1908 No. 7

CUTHBERT ROOKERY.

CUTHBERT ROOKERY is probably the last rookery in Florida at all comparable with those great gatherings of nesting birds formerly common throughout the state. Rookeries of Ibises, of Cormorants, of Little Blue and Louisiana Herons and of other non-plume-bearing birds may still be found by those who know where to look for them, but at Cuthbert alone, so far as I am aware, will one find all the birds mentioned, together with Spoonbills and American and Snowy Egrets. This rookery is situated in what the maps term the "Great Mangrove Swamp," which borders the Everglades at the southern extremity of Florida, and is about seven miles from the coast at a point known as Snake Bight, some twelve miles east of the settlement of Flamingo. The proposed extension of the Florida East Coast railroad to Cape Sable would have passed within a mile or two of it.

Cuthbert is well known to every "plumer," or plume hunter, of South Florida. It has been "shot out" repeatedly, but its isolation and comparative inaccessibility, together with the absence of fresh water make it worthy the plumer's attention only when the progeny of the birds which have escaped the last raid have become sufficiently numerous to repay the hunter for the exertion and privation of a visit. The isolation of Cuthbert also makes it a refuge for birds which have been "broke up" in less remote places, and it is not improbable that the last Snowy Egret and Roseate Spoonbill of Florida will be shot here.

I made four attempts to reach Cuthbert Rookery before succeeding. In May, 1904, while en route to it, I was intercepted by Warden Bradley in the Keys, near Tavenier Creek, with news that the rookery had been "shot out." Under his guardianship, the "white birds" had increased to numbers, which, with aigrettes selling at thirty-two dollars an ounce, made the venture worth the risk. The warden was watched and in his absence his charges were slaughtered. The man who was with

Bradley when he returned to the rookery told me, "You could a-walked right around the ruke-ry on them birds' bodies; between four and five hundred of 'em."

The following year, while working toward Cuthbert, my outfit was destroyed by fire, and operations were of necessity postponed. That summer Bradley was shot while on duty, a death he had long predicted for himself, and I made no further effort to visit the rookery until 1907, when the plan was defeated by conditions encountered in the Bahamas.

MAKING A SKETCH FOR THE BACKGROUND OF THE CUTHBERT ROOKERY GROUP.

In 1908, however, the trip was made without mishap and, once started, proved to be by no means a difficult undertaking. My special object in visiting Cuthbert was to make studies on which to base a group of Roseate Spoonbills. Fortunately the rookery was found to contain between thirty and forty of these rare birds, together with a dozen Snowy Egrets, three or four hundred American Egrets, at least two thousand Louisiana Herons, with some fifty Little Blue Herons, several hundred White Ibises and a few Cormorants. The Spoonbills and Herons were

nesting and it was decided to increase the size of the group to include not only the Spoonbills, but also the birds that were nesting with them, thus reproducing a bird "rookery," once so characteristic of Florida.

F. M. Chapman.

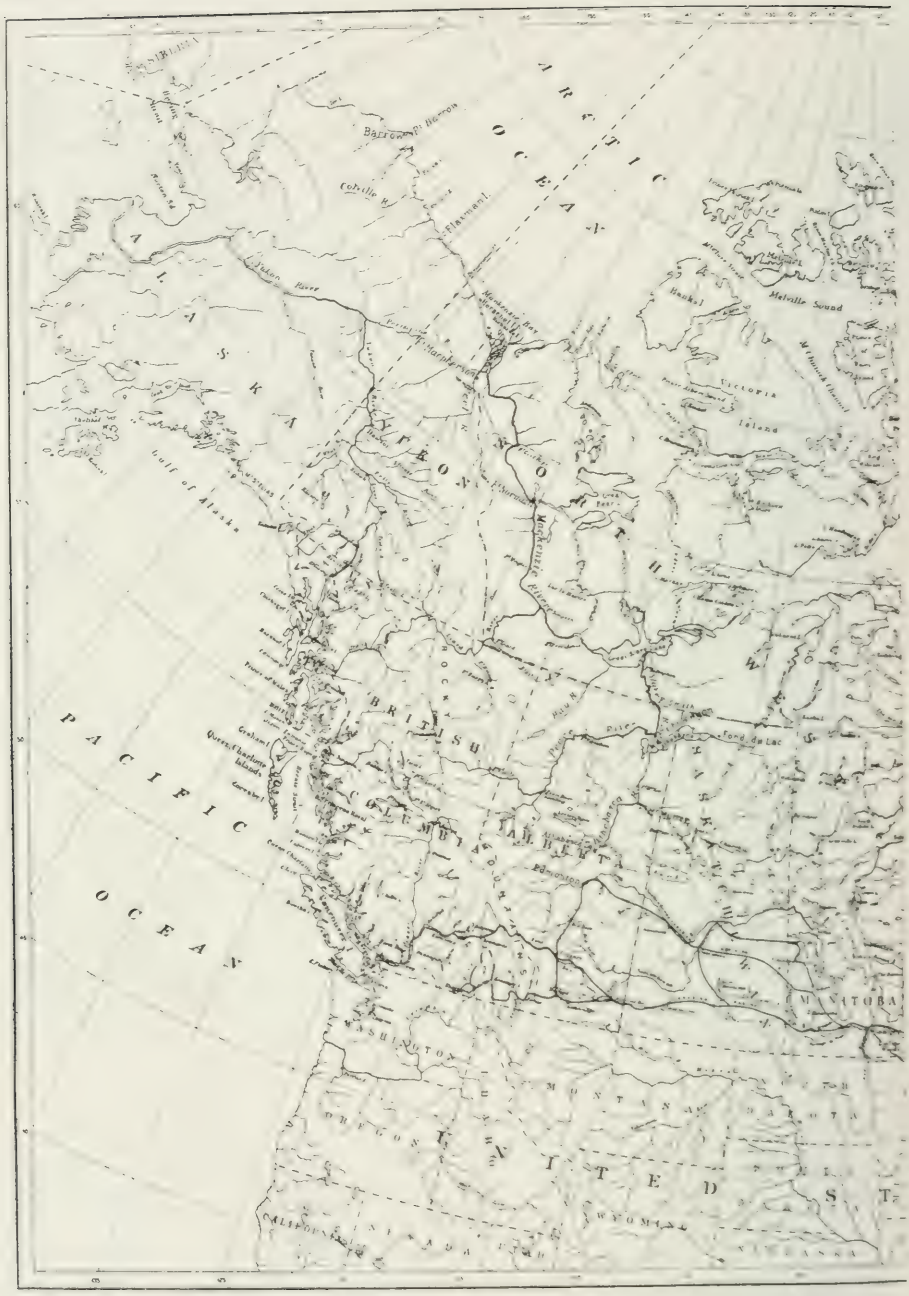
THE STEFÁNSSON–ANDERSON ARCTIC EXPEDITION.

THE adventures and vicissitudes of an expedition into the Arctic regions are well shown in letters recently received from Mr. V. Stefánsson, who, as already related in the Journal, left New York last April to spend a year and a half or two years and a half among the Eskimo living along the northern coast of the North American continent, particularly east of the delta of the Mackenzie River. In the October Journal mention was made of Mr. Stefánsson's having reached Smith's Landing, or Fort Smith, on the Slave River early in June. He and his associate, Dr. R. M. Anderson, left Fort Smith June 11, floated down the river in scows, were towed by a small steamer three days' journey across Great Slave Lake and thence down the Mackenzie River, arriving on July 2 at Fort Norman, which is at the inflow of Bear Lake River. Leaving Dr. Anderson temporarily at Fort Norman, Mr. Stefánsson was towed in his own whaleboat (obtained on Great Slave Lake) down the Mackenzie and up Peel's River to Fort Macpherson, where he arrived July 6. Nine days later Dr. Anderson joined Mr. Stefánsson at Fort Macpherson, and on July 16 the two associates left for Herschel Island, Arctic Ocean, after securing a second whaleboat. The narrative may best be continued by quotations from Mr. Stefánsson's letters:

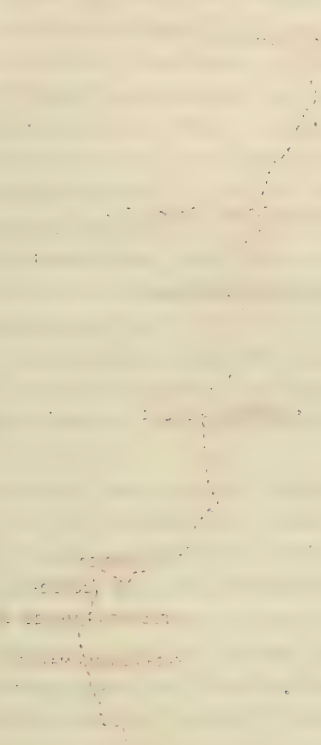
"Herschel Island, August 9, 1908.

"* * * * * We had rather unfavorable weather and did not reach Herschel Island until July 29th, a rather slow passage, although we made every effort to hurry. It had been my intention to proceed at once to Flaxman Island to see Mr. Leffingwell,[1] but two things deterred me,— it was already late

[1] Mr. E. DeK. Leffingwell was a member of the Mikkelsen–Leffingwell Polar Expedition which went north in 1906 and of which Mr. Stefánsson was the ethnologist for more than a year. After the expedition dissolved, Mr. Leffingwell remained in the North to do geographical work along the Arctic coast of Alaska. *Editor.*



MAP OF NORTHWESTERN CANADA AND ALASKA, INCLUDING THE REGION TRAVERSED BY THE STEFÁNSSON-ANDERSON POLAR EXPEDITION.



ROUTE AND ITINERARY OF THE STEFÁNSSON-ANDERSON ARCTIC EXPEDITION, APRIL 30 TO AUGUST 29, 1908.

for going so far, for the whaling ships which I hoped to meet might pass Flaxman before I got there, and the police at Herschel had heard rumors to the effect that Mr. Leffingwell had gone west to Point Barrow in the spring to meet the whaling ships there. I therefore camped at Flanders Point on Herschel Island (the southeast corner of the island, some five miles from the whalemen's harbor) where we have since then been catching about sufficient fish for the dogs and ourselves.

"But we have waited in vain for the ships. The ice conditions, so far as can be learnt from here, are the worst in years. A native family that has just come in from about forty miles west along the coast, reports big ice everywhere so far to seaward as they could see from the highest hills. People here (five policemen, one of whom has been here some seven years; two sailors, one of whom has been whaling around Herschel since 1889, and all the natives) have about given up hope of ships coming in this year. Of course nobody knows; they may be less than twenty miles away as I write this. * * * * * * * *

"At present we have on hand supplies as follows: $\frac{2}{3}$ of a sack of flour (about 35 lbs.), five pounds of rice, five pounds of tea, one pound of salt and about fifty pounds of dried fish. The fish we have caught have been consumed from day to day, and literally nothing in the line of food, tobacco, etc., can be bought, of course, at any price. Here at the Island some two hundred Eskimos are waiting in the hope of ships with which to trade for furs, and scarce a family of them has enough food for itself. Two families of Eskimos have attached themselves to our fortunes, so it is evident that our party of eight persons and twenty dogs will leave here for whatever journey is undertaken with rather scant rations in prospect for the first few days till we get to some favorable hunting and fishing location.

"Evidently we have made a mistake in relying at all on whalers, but in an ordinary season not to make use of them would be an equally grave mistake. Now, however, we have not even a month's supply of matches. Tea, tobacco and matches are considered the three essentials in this country. * * * * * * * * * *

"In going west our plan, in general, is about as follows: We shall not attempt to take the route inside the reefs, tho' it is safer, but shall keep outside for the purpose of meeting any ship that may chance to be coming eastward. At Flaxman Island or near there we expect to leave some of our party and most of our dogs (counting those owned by the natives, we have 20 now) and keep on going for Point Barrow where I expect Leffingwell is now and whither the whaling ships and revenue cutter are almost sure to have penetrated. At that place we may be able to get some supplies, — at least we should be able to get matches and tobacco.

"If we have reasonable luck we shall be able to get east again from Barrow with our boats to whatever point we decide upon for wintering; meantime we hope that the part of our crowd we leave behind will be able to get together a small supply of fish and possibly a few deer. We may also have a little time for digging in ruins when delayed by head winds going to and coming from Barrow."

"Point Barrow, Alaska, August 22nd, 1908.

"We left Herschel Island August 15th, proceeding westward in the hope of either getting matches and such other things as we most needed at Flaxman Island (from Mr. Leffingwell) or from Point Barrow, and hoping to winter on the Colville or east of it.

"Towards evening of August 16th the whaler 'Karluk' came in sight from the east and I boarded her some 20 miles west of Herschel Island,— we had had unfavorable winds. His food supply was so short that he did not care to take our party and all our dogs, but was willing to take me and one boat to some place where I should be able to get supplies (matches, etc.) to proceed with eastward. He expected to meet the incoming whaler 'anywhere between Herschel and Barrow, but probably east of Flaxman.' I asked Dr. Anderson with two boats and three Eskimos to proceed westward along the coast till they came to some promising hunting or fishing locality.

"I intended going ashore at Flaxman to see whether Mr. Leffingwell could supply our needs, but he saved me this by coming on board, asking Capt. Wing to take him as a passenger 'for the outside,' which Capt. Wing did. Mr. Leffingwell said he had given the natives all his matches, had no tobacco and practically no coal oil,— and what he had was mostly pledged. Fortunately he was owing one of my Eskimos 10 gallons of coal oil, and this he had left for him at Flaxman. Evidently there was nothing for me to do but go to Point Barrow, some 225 miles farther west.

"All the way from Herschel to 12 miles east of Point Barrow ice conditions were unusually bad for this time of year, still we got through, but with frequent delays. But the evening of August 19th the 'Karluk' was stopped by impenetrable ice some 10 or 12 miles east of Point Barrow (the north tip of the continent). From that point and for some 40 or 50 miles beyond, at least, the ice is solid,— impassable for any ships, large or small.

"When the 'Karluk' was stopped, we immediately got into our boat, for there was water enough along the shore for a whaleboat, and proceeded to Cape Smith, some 12 miles beyond (west of) Point Barrow, and Mr. Leffingwell came with me. Here we were warmly welcomed by Mr. Charles Brower, the master of the whaling station, and invited to stay with him so long as we liked.

"Mr. Brower has been here since 1885 and has never seen ice conditions even approximately so bad as this summer. The ice has been motionless since spring, and it is his opinion that no ship has penetrated beyond Icy Cape, some 150 miles west of here, and that any ship should get here is almost hopeless now, for the freeze-up is near at hand.

"Although Mr. Brower has almost nothing of the many things he needs for himself, he can supply two of our most pressing wants,— he has plenty of matches and tobacco. It is hopeless to proceed in my boat farther west along the coast, for should we find the ships at Icy Cape, it is almost certain we should get frozen in west of Point Barrow on our return. The fall freeze-up, Mr. Brower says, came one year as early as August 20th. We shall therefore start east next Monday (this is Saturday), weather permitting.

"You probably remember that when planning spending a year in the Colville country I counted on supplies at Flaxman Island, for, as I believe I said to you, it is feasible to make one's living east of the Mackenzie, but the Colville is a 'starvation country.' Now we shall have to try it without supplies, and I am a little worried over the prospect. If the ice conditions are good, we may of course get plenty of seal, but last winter the seal supply was insufficient. That is one reason, I believe, why Mr. Leffingwell's supplies are so nearly exhausted.

"If we do starve, my plan is as follows: I shall divide up the party of Eskimos and ask Dr. Anderson to take some of them and go to Point Barrow. It is likely that some whales will be caught here this fall, and people here won't probably starve. By November there will be news, too, of how far the ships got, and if there is no food here, there will probably have been landed supplies at Icy Cape, and Dr. Anderson can go there. * * * If ships come in next summer, he can come east with them (unless he sees some good reason for not doing so) but if no ship comes he will probably have to go out by way of Point Hope and Nome.

"Whether or not Dr. Anderson goes to Point Barrow as above (for some circumstance may make it seem wiser for both of us to go east) I shall probably go east, if food is insufficient around Flaxman and the Colville, and get into the game and fish country somehow. I expect then to be able to meet the summer mail through Macpherson and to proceed to Baillie Island. There I hope to meet the whalers, if they come in, and to be independent of them if they don't."

"Point Barrow, August 29th, 1908.

"Fortunately the wind turned promising (from northeast) Monday last, so we did not start east, but waited in the hope of ships. The wind continued steady and strong; the ice broke Tuesday and drifted from shore;

Wednesday the ships came in, but were unable to proceed beyond the Point and will turn back in a few days."

From the whalers Mr. Stefánsson secured about four tons of provisions and other necessaries, thus removing all fears of starvation, and with a small sloop which he was able to charter at Point Barrow he was going to lose no time in starting for Herschel Island again, taking with him Mr. Storker Storkerson, Mr. Leffingwell's most efficient assistant.

THE ARCHÆOLOGICAL RECONNAISSANCE OF WYOMING.

THE archæological reconnaissance of Wyoming, which was begun for the Museum last year was continued by a trip this summer throughout the northeastern part of the State. This whole work has been undertaken as a contribution towards an investigation into the archæology of a vast region, including the Great Plains, the Barren Lands and the Plateau region of America, a region larger than the entire remaining portion of the continent, and regarding which there is practically no archæological knowledge or available specimens from which to secure such knowledge.

Wyoming is located near the southern center of this region, and seemed to be the nucleus from which the work might be started. The task was to look over the field in order to locate sites where it would be profitable to carry on detailed investigations, incidently securing as much information as possible.

Among the general problems which are awaiting solution may be mentioned the following: 1,— When was the region first inhabited? 2,— What was the material culture of the people? 3,— Were people living in the region before the introduction of the horse; and if there were, how did the coming of this valuable animal affect their culture? 4,— Was there more than one culture in the region; and if there was, where may the boundaries of the culture areas be found?

Securing the services of an experienced cow man with a wagon and team, I made a trip of more than 450 miles, circling the northeastern portion of Wyoming. The journey was begun at "Nine Bar" Ranch, at the southern end of Rawhide Buttes, extended northward across the "bad land" sheep country as far as Newcastle, on the edge of the Black

Hills; thence westward across the treeless sheep and cattle country to Sheridan, near the Big Horn Mountains; thence southward to Casper.

Besides taking photographs, making observations and securing notes from the scattered inhabitants of the region regarding archæological sites, pictographs, petroglyphs, prehistoric quarries and artifacts, several rather important places were discovered.

A large quarry was found where the early inhabitants of the region,

BREASTWORK MADE BY INDIANS IN A ROCK-SHELTER

Oil Creek, Black Hills, Wyoming. The walls bear petroglyphs.

who, at that time, must have been unaffected by contact with the white race, secured stone out of which to make their knife-blades, spear-heads, arrow-points, scrapers, drills and similar implements. This quarry was located on the southern end of Browell Hill, which in the East would be called a considerable mountain, about a mile east of the junction of Hat Creek and Old Woman Creek. There were numerous pits in the

top of this hill, going down into strata carrying seams and nodules of close-grained quartzite and similar rocks. Scattered about these pits were the battered pebbles which had been used as hammers. Some of these had a groove pecked around them to facilitate the fastening of a handle.

This quarry is remarkable for its extent, covering about five acres. It is also farther north than any prehistoric quarries of such stone pre-

PETROGLYPH REPRESENTING A MAN

Oil Creek. Of same type as one found in 1907 at Hammond, Wyo., and another found in 1908 in Big Horn Mts.

viously known to exist in the state, and, taken with similar quarries visited last year, it emphasizes the truly tremendous amount of quarrying which has been done in Wyoming. The extent of this quarry work seems the more marvelous when we know that the region where the bulk of the quarried material was used has not yet been found. This is quite

probably farther east, but west of the Missouri River. Perhaps much of it will be found in the North Platte valley.

Petroglyphs were seen and photographed on the sandstone cliffs and cave walls of Oil Creek, which is on the edge of the Black Hills, some six miles west of Newcastle. Some of these petroglyphs were identical in character with those found last year near Hammond in the southern part of the state. Pictographs, one of them in red, and the others in black and drab, were found in a large sandstone cave overlooking the northern side of Muddy Creek in the foothills of the Big Horn Mountains, about fourteen miles southwest of Buffalo. Some of these also resembled the Hammond petroglyphs in outline. Others seemed to represent shields and similar objects used by the recent Plains Indians. Along the route were seen numerous circles of stone marking ancient house sites and a few piles of rock of problematic use, both classes of remains resembling those seen last year in the southeastern part of the state. Nothing, however, was found to indicate that any of the remains were as recent as the coming of the first white men to the region, since no glass beads, iron arrowpoints or similar materials were found associated with them. On the other hand, nothing was seen which would prove their great antiquity, or show that they were older than the securing of the horse by the native peoples who formerly lived in this part of the country.

While, of course, these results are hardly sufficient to prove that man did not occupy the region until after the introduction of the horse gave him a beast which would facilitate his movements out into the buffalo plains, and until after the settlements in the east had begun to crowd the Indians westward, nevertheless this negative evidence suggests quite strongly that at least a portion of the Great Plains was uninhabited until after the horse was known to the Indians. There are certainly no deep deposits of village refuse or many antiquities to be found in the region, such as are easily discovered in places that are known to have been inhabited for a period antedating the coming of the horse, as for instance Ohio and the state of Washington. To be sure, the results of quarrying are extensive, a great deal of stone having been removed, but those who know the real Indian are aware that this work could have been done in a comparatively short period of time.

While, on the whole, the results of the two archæological trips to Wyoming suggest that that particular region was not inhabited until

after the advent of the horse, yet such a conclusion cannot be definitely reached without an accumulation of negative archæological evidence, or without making sure that mythological, ethnological or historical evidence may not eventually lead to an opposite conclusion.

HARLAN I. SMITH.

MUSEUM NEWS NOTES.

IN the interest of the collection of fossil fishes, Professor Bashford Dean recently visited several European collecting localities and has brought to the Museum a number of accessions. Thus he secured in the region of Solnhofen some exquisite and rare ganoids, in Weymouth several pycnodonts, in the Forfar country lungfishes and placoderms, in the north of Scotland (Lhambryde) placoderms and the curious and primitive "shark" Psammosteus. Exchanges also were arranged, notably with the museum of Newcastle-on-Tyne, and a collection of Scottish Devonian fishes has recently been received from the Edinburgh Museum. By purchase the Department has come into the possession of upward of two hundred teeth of a Tertiary species of the shark Carcharodon, by means of which it will be possible to reconstruct the dentition of this, the most formidable shark that probably ever existed. Single teeth attained a height of more than six inches, and the span of the mouth could hardly have been less than ten feet.

DR. R. M. ANDERSON, who accompanied Mr. Stefánsson to the Arctic regions for the purpose of collecting birds and mammals and making meteorological observations, has sent in a report under date of August 11 from Herschel Island. All the way from Athabasca Landing through the great series of rivers and lakes leading into the Mackenzie River and down that stream to the Arctic Ocean hunting was done at every opportunity. Considerable material in the line of birds was obtained, but mammals of all kinds were found to be extremely scarce, in fact this has proven to be a trying season for the Indians, because it has been so difficult to get furs.

THE delegates to the International Fisheries Congress that met at Washington September 22–25 passed through New York on Monday,

September 28 *en route* to Buzzard's Bay, Boston and Gloucester and were entertained at luncheon at the Museum by President Osborn. Mr. Roy W. Miner, assistant curator of invertebrate zoölogy, received a prize at the Congress for an article upon "A Plan for an Educational Exhibit of Fishes" and Mr. Dwight Franklin of the same department received one for a paper entitled "A Method of Preparing Fishes for Museum Exhibition Purposes."

Mrs. Armar D. Saunderson has recently presented to the Museum valuable mounted specimens of the Bongo Antelope and the Bush or Giant Pig. Mrs. Saunderson, while on a hunting trip last winter, obtained these specimens from natives in Eldamo Ravine, British East Africa, and had them mounted in London. The animals are rare and the species are entirely new to the Museum collection.

Since our last issue the following persons have been elected to Membership in the Museum: Life Members, Misses Emma H. Lockwood and Clara B. Spence; Annual Members, Messrs. William C. Allen, C. Forster Cooper, John P. Dreyer, William T. Blodgett, Herman J. Eekhoff, Henry Ruhlender and J. H. Eilbeck and Mrs. Joseph Pulitzer.

Mr. and Mrs. Waldemar Jochelson, who were members of the Jesup North Pacific Expedition, were guests at the Museum during October, while making studies of some of our Alaskan material. Mr. and Mrs. Jochelson are on their way to the Aleutian Islands to prosecute extensive ethnological studies under the auspices of the Russian Imperial Geographical Society of St. Petersburg.

LECTURE ANNOUNCEMENTS.

MEMBERS' COURSE.

The first course of illustrated lectures for the season 1908–1909 to Members of the Museum and persons holding complimentary tickets given them by Members will be given in November and December.

Thursday evenings at 8:15 o'clock. Doors open at 7:45 p. m.

November 12.— William A. Bryan, of the Bernice Pauahi Bishop Museum of Honolulu, "Kilauea in Action. A Visit to Hawaii's Famous Volcano." (Illustrated with moving pictures.)

November 19.—Frank M. Chapman, "Florida Bird Life." (Illustrated with moving pictures.)
December 3.—Henry E. Crampton, "Tahiti and the Society Islands."
December 10.—Nathaniel L. Britton, "Some Native Trees, Their Flowers and Fruits."
December 17.—Roy C. Andrews, "Whale Hunting with a Camera."

PUPILS' COURSE.

These lectures are open to the pupils of the public schools when accompanied by their teachers and to the children of Members of the Museum on the presentation of Membership tickets.

Lectures begin at 4 p. m.

	Oct.	Nov.	
Monday,	26	16.	"New York City — Past and Present." By Roy W. Miner.
Wednesday,	28	18.	"Commercial Centers of Europe." By Edmund Otis Hovey.
Friday,	30	20.	"Scenes from Pole to Pole." By Roy C. Andrews.
	Nov.		
Monday,	2	23.	"Our South American Neighbors." By Walter Granger.
		Dec.	
Wednesday,	4	2.	"'Hiawatha's' People." By Harlan I. Smith.
Friday,	6	4.	"Industries of the United States." By Roy W. Miner.
Monday,	9	7.	"Among the Filipinos." By Roy C. Andrews.
Wednesday,	11	9.	"Physical Geography from Pictures." By Edmund Otis Hovey.
Friday,	13	11.	"Home Life of American Birds." By Frank M. Chapman.

LEGAL HOLIDAY COURSE.

Open free to the public. Fully illustrated. No tickets required.

Thanksgiving Day, November 26, 3:15 p. m. Doors open at 2:45 p. m.

"Volcanoes, Ancient and Modern." By Edmund Otis Hovey.

COLUMBIA UNIVERSITY COURSE.

Jesup Lectures.

Given in coöperation with Columbia University.
Wednesday evenings at 8:15 o'clock.

A course of ten lectures on light by Richard C. Maclaurin, LL.D., Sc.D., Professor of Mathematical Physics in Columbia University.

November 18.—"Object of course. Newton's experiments and contributions to optical theory."

November 25.— "Color vision and color photography."
December 2.— "Dispersion and absorption of light. Recent theories. Electrons."
December 9.— "Spectroscopy. Applications to chemistry and astronomy."
December 16.— "Polarization, with some applications to chemistry and molecular physics."
January 6.— "The exact laws of reflection and refraction and their bearing on the construction of optical instruments."
January 13.— "Optical properties of crystals."
January 20.— "The principle of interference and its explanation of various color phenomena."
January 27.— "The measurement of light waves and the theory of diffraction."
February 3.— "Some relations between light and electricity."

PEOPLE'S COURSE.

Given in coöperation with the City Department of Education.
Saturday evenings at 8 o'clock. Doors open at 7:30.

Professor Charles Baskerville, of the College of the City of New York,— the last of a course of six lectures on chemistry, illustrated by experiments and stereopticon views.

November 7.— "Sodium, Potassium and Calcium, and Their Compounds."

Professor Bradley Stoughton of Columbia University,— a course of six lectures on metallurgy, illustrated by experiments and stereopticon views.

November 14.— "The Metallurgy of Iron and Steel."
November 21.— "The Making of Iron."
November 28.— "The Making of Steel."
December 5.— "The Uses of Iron and Steel in Machine Shops and Bridges and other great Engineering Structures."
December 12.— "The Rolling and Forging of Iron and Steel."
December 19.— "The Heat Treatment of Steel."

Tuesday evenings at 8 o'clock. Doors open at 7:30.

November 3.— Mr. Charles Everett Beane, "Newfoundland." Illustrated by stereopticon views and motion pictures.
November 10.— Mr. R. Cornelius Raby, "The Texan and His State." Illustrated by stereopticon views.
November 17.— Mr. Isaac F. Smith, "The City of Mexico." Illustrated by stereopticon views.

Mr. Charles M. Pepper, of the Department of Commerce and Labor, — four illustrated lectures on "The Twentieth Century South America."

November 24.— "Panama to Patagonia."
December 1.— "Argentine, the World's Wheatfield."

December 8.— "The Vastness of Brazil."
December 15.— "Colombia and the Andes."

Children are not admitted to the lectures of the People's Course, except on presentation of a Museum Member's Card.

SPECIAL EXHIBITIONS.

November 13. First public view of the mounted skeleton of the famous race horse "Sysonby"; new fossil horses obtained in Nebraska by last summer's expeditions; re-arranged alcove illustrating the evolution of the horse. This exhibition will continue for several weeks.

November 17–20. Fall exhibition of the Horticultural Society of New York, in co-operation with the Museum. The exhibition will be open on Tuesday after 7 o'clock P. M., especially for the members of the Museum, the Society and affiliated organizations. On Wednesday and Thursday from 9 A. M. until 10 P. M., and on Friday from 9 A. M. until 5 P. M., the exhibition will be open to the general public.

In response to a request from the Committee on the Prevention of Tuberculosis of the Charity Organization Society of New York, the exhibition made at Washington in connection with the recent International Tuberculosis Congress is to be brought to New York and displayed at the Museum. This exhibition, which has already aroused wide-spread interest, will illustrate the work done and in progress in several states of the Union and in the more progressive countries abroad. The exhibition will be opened in the latter part of November and will continue for about four weeks. It will be installed in the new Columbus Avenue wing of the Museum and will be open to the public during the usual hours. Additional particulars will be published in the daily newspapers.

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and Affiliated Societies will be held at the Museum according to the usual schedule.

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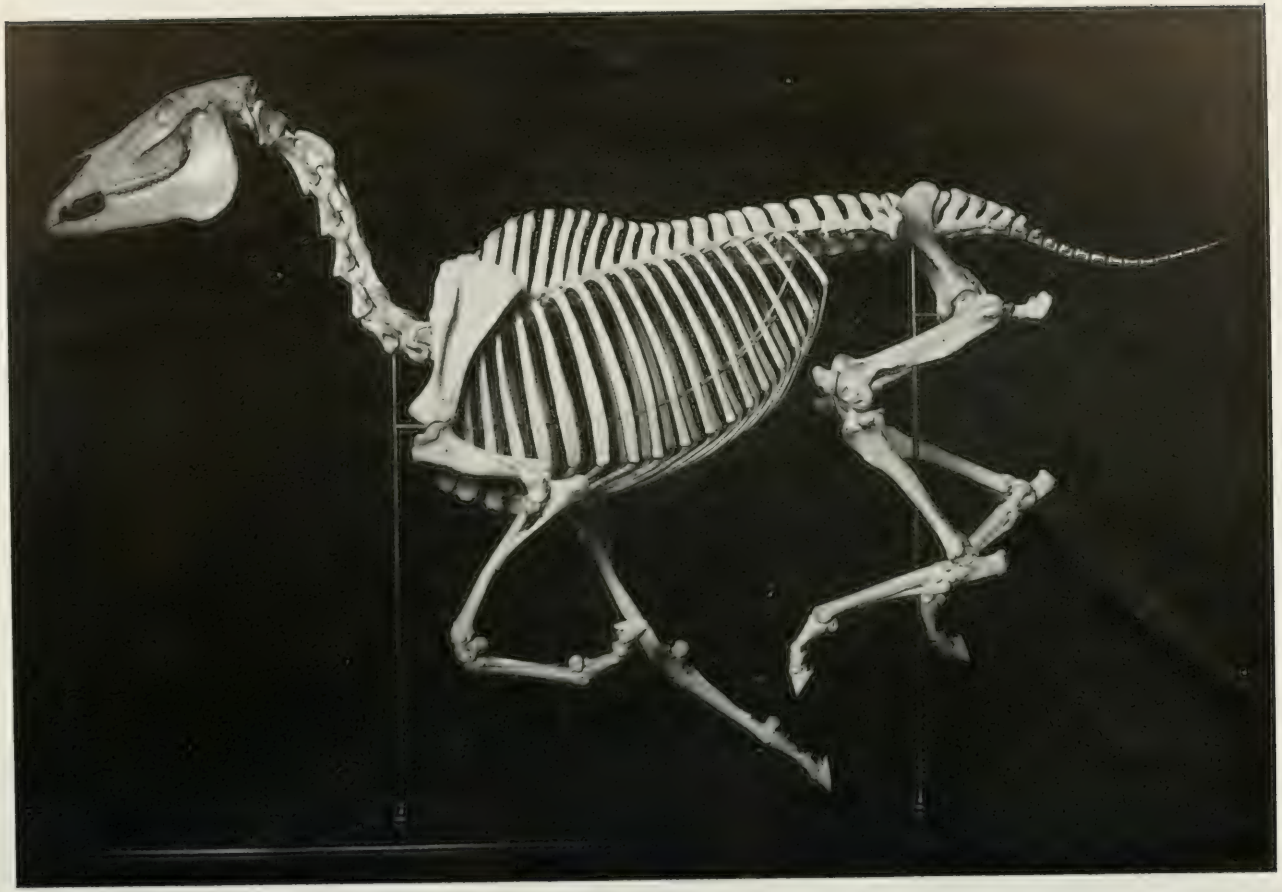

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SKELETON OF THE RACE HORSE "SYSONBY"

Presented by James. R. Keene. Prepared and mounted by S. H. Chubb.

The American Museum Journal

Vol. VIII DECEMBER, 1908 No. 8

EXHIBIT ILLUSTRATING THE EVOLUTION OF THE HORSE.

ON Friday, November 13, there was opened in the Hall of Fossil Mammals a special exhibit illustrating the evolution of the horse, at which was given the first public view of the mounted skeleton of the celebrated horse "Sysonby."

Sysonby was one of America's most famous race horses. He was foaled, February 7, 1902, at Mr. James R. Keene's Castleton stud in Kentucky, a few months after the importation from England of his dam "Optime," his sire being "Melton," also English bred. Sysonby's record is one of the most brilliant in the history of American horse racing. He won a remarkable series of victories between his first race at Brighton Beach, July 14, 1904, as a two-year old, and his death at four years of age (June 17th, 1906). Mr. Keene generously presented the skeleton to the Museum and provided for its preparation and installation.

The mount represents a characteristic phase in the stride of a running horse and was prepared by Mr. S. H. Chubb under the direction of Professor Henry Fairfield Osborn, the work being based upon direct observation and instantaneous photographs of Sysonby and other race horses taken by E. Muybridge, J. C. Hemment and S. H. Chubb. The position is that taken the moment after the right fore foot has left the ground, and the right "knee," or carpus, is beginning to bend; the succeeding foot-falls in order are, left hind foot, right hind foot, left fore foot, right fore foot. The length of a complete stride is about 26 feet.

At this instant the hind quarters and limbs are lifted perceptibly higher than the shoulders, and from a rear view it will be seen that, while the hind feet are thrust forward at a great height from the ground, they are widely separated from each other so as to avoid striking the fore legs. A moment later the shoulders will be lifted by the push of the fore foot higher than the hind quarters, then the hind feet will move toward the median line and strike the ground, while the fore feet will move forward out of the way of the hind.

The back bone is slightly arched to help draw together the fore and hind limbs and feet, and thus lengthen the stride and bring the back muscles into play. When viewed from above, the back bone is also observed to be curved a little to the right, owing to the forward position of the left side of the pelvis and of the left hind limb; this also lengthens and gives power to the stride as the back bone is straightened.

The American Museum has made a specialty of the study of the evolution of the Horse, as one of the most striking and best known examples of evolution, and the present exhibit two phases of it: First, the Evolution of the Horse in Nature, showing how and why the horse came into existence; Second, the Evolution of the Horse under Domestication, showing the different races which have been evolved by man through selection and breeding.

The first phase is illustrated by the series of fossil ancestors of the horse in successive geological epochs. These are represented by complete skeletons of nine stages in the ancestry of the Horse, and numerous skulls and parts of skeletons showing every intermediate gradation from the earliest ancestor, no larger than a terrier dog, to the modern descendants. These are chiefly from the "badlands" of the arid Western States, where the most complete and abundant remains of fossil horses have been found. The specimens on exhibition in the Museum are arranged to show the gradual development of the peculiar characteristics which distinguish the horse from other animals, and especially the adaptations to swift running over the open plains which are the natural habitat of the animal. With each skeleton is placed a restoration showing the probable appearance and natural surroundings of the animal during life. The exhibit is further illustrated by models, diagrams and special series showing the evolution of certain parts of the skeleton.

The restorations of extinct horses have been made by the well known animal painter, Mr. Charles R. Knight, under the supervision of Professor Osborn. All the modern species of wild horse are also represented by careful paintings from life by Mr. Knight.

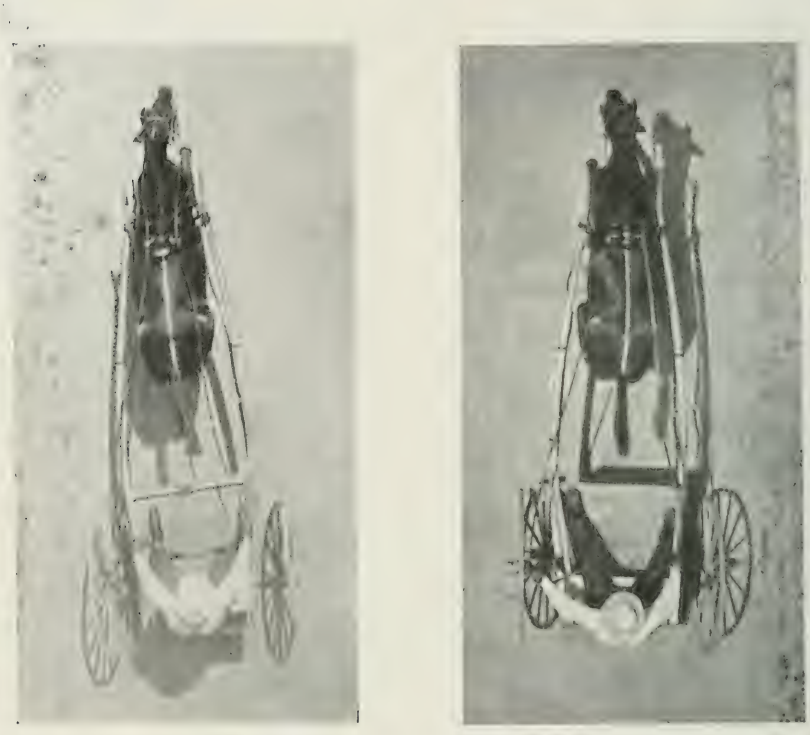
The second phase, the evolution of the horse under domestication, is illustrated by a number of skeletons of different races of the horse, mounted with especial care and accuracy in correct and characteristic positions. The smallest race is the Shetland pony, the largest the great Percheron draught horse. The true Arabian horse is represented, and the latest addition to the series is the racer Sysonby. One of the most

PHOTOGRAPHING A RACE HORSE RUNNING AT FULL SPEED

At the American Museum of Natural History.

striking mounts in the Horse Alcove is that of the rearing horse and man, showing the domination of man over this powerful animal through superior intelligence, in spite of relatively slight physical strength.

The American Museum collections of fossil horses are larger than those of all other museums put together, but only a small part are on exhibition, by far the greater part being in the study collections on the top floor, accessible to scientific students. Here there are preserved



RUNNING RACE HORSE IN ACTION.

Instantaneous photograph taken from apparatus shown on page 119.

hundreds of skulls and partial skeletons, thousands of jaws and tens of thousands of teeth and bones. They come from all parts of the world where fossil horses have been found, but chiefly from the western bad lands. Some have been obtained by exchange with other museums or by purchase, but the greater part has been collected by expeditions which have been sent out year after year since 1891.

Among the notable specimens in the series of ancestors of the horse are

(1) The earliest Four-toed Horse, *Eohippus*, from the collection of the late Professor E. D. Cope, purchased by the Museum in 1894. This unique specimen was found in a Lower Eocene formation of Wyoming in 1880 by J. L. Wortman and has long been well known to scientists.

(2) A second later stage of the Four-toed Horse, *Orohippus*, repre-

SYSONBY AT FULL SPEED.

From model prepared by E. S. Christman.

sented by the only skeleton ever discovered. This was found by Walter Granger of the American Museum expedition of 1905 in southwestern Wyoming. It is but little larger than the *Eohippus*, but it shows a certain advance toward the horse type especially in the teeth and feet.

(3) Three complete skeletons of the early Three-toed Horses, *Mesohippus*, showing successive increase in size, and a further advance toward the horse type in all details of structure; this is especially noticeable in the teeth and feet. These skeletons are from the Big Bad Lands

of South Dakota, and were discovered by J. W. Gidley, H. F. Wells and the American Museum expedition of 1894.

(4) A skeleton of the Three-toed Forest Horse, *Hypohippus*, from the Middle Miocene of Colorado, collected by Barnum Brown of the American Museum expedition of 1901. This is not a direct ancestor of the modern horse, but is a nearly related type, adapted to a forest country.

(5) A skeleton of the Three-toed Desert Horse *Neohipparion* from the Upper Miocene of South Dakota, obtained by H. F. Wells of the American Museum expedition of 1902. This very perfect skeleton represents the last stage of development of the three-toed horses before the side toes disappeared.

(6) A skeleton of the true native American Horse, *Equus Scotti*, extinct since the Pleistocene Epoch. This fine skeleton was found in Texas by J. W. Gidley of the American Museum expedition of 1899. It is very much like the domesticated horse and equals it in size, but has in certain respects the proportions of a zebra. Wild horses were unknown in America when discovered by white men, though they had formerly been abundant. Why they became extinct no one knows.

The Museum Expedition of last summer (1908) in Western Nebraska obtained a large and interesting collection of Three-toed Horses. The most important find was a bone bed containing thousands of jaws, teeth and fragments, principally of horses, but also including a great variety of other animals, some fifty or sixty species in all. These appear to be of Pliocene age, representing an intermediate stage, hitherto very little known in this country, between the Three-toed Horses of the Miocene and the One-toed Horses of the Pleistocene. It is hoped that further work in this interesting deposit will bring to light more complete specimens. Several incomplete skeletons of Three-toed Horses from the Middle and Lower Miocene formations of Western Nebraska were also secured, besides a fine series of skeletons and other remains of camels, rhinoceroses and other forms.

One feature of the American Museum Fossil Horse collections of especial value to scientists is that it includes practically all the type specimens from which the various species have been described, either the original specimens or carefully executed plaster casts. It is intended to make this series absolutely complete, so that students desiring to compare or identify specimens will find here everything that has been described, and by consulting the library, can find out all that has been said about it.

DEPARTMENT OF MINERALOGY.

THROUGH Edward L. Dufourcq, the President and the Board of Directors of the Minas Pedrazzini Company at Arizpe, Sonora, Mexico, have presented to the mineral cabinet a very remarkable specimen of crystallized Polybasite. This ore of silver (sulphantimonide of silver with some of the silver replaced by copper) furnishes a large part of the vein material from which the silver is obtained in this very productive mine. At favorable points there have developed beautifully crystallized specimens of the mineral upon a scale of magnitude almost unique. The entire mass as forwarded consisted of a crystallized surface, displaying small and large crystals, nestling upon an ore body of considerable size. The value in bullion of this unusual aggregate was $640 ($1280 Mexican), and it probably was the largest mass of Polybasite ever taken from a mine entire. It suffered breakage in transit and separated into two specimens which were still of great value. Fortunately these were contrasted in character, since one contains the great tabular crystals (3 inches across) of Polybasite, and the other less unusual smaller crystals, intersecting and merged in the more irregular mass beneath. While the breaking of the specimen is most regrettable, the splendor of the large crystals becomes perhaps more imposing by this removal from their smaller and less significant associates. The crystals are six-sided plates of the orthorhombic system, slightly protuberant in the center and sharply striated or ruled. They intersect at nearly right angles, making a cellular box-like structure that seems to be characteristic, since a similar disposition is observed in the smaller crystals.

Some interesting minerals from the famous Broken Hill mines of New South Wales have been purchased through the Bruce endowment. This locality, which has furnished so many superb mineral examples to collections, notably specimens of Stolzite (lead tungstate), Cerussite, Anglesite, Azurite, with crystallized Cerargyrite, Embolite, and the very rare Minersite, has been largely exhausted, but a Mrs. Slee, the widow of a mining engineer employed in the mines, brought to this city a group of valuable specimens, representing a collection made by her husband. These mines are situated in the Silverton District and Barrier Ranges of New South Wales and have at some points yielded extraordinary

bullion values of silver. In one case 48 tons of a ferruginous matrix yielded 37,000 ounces of silver, and in another case 1300 ounces of silver per ton was reported. The rare haloid compounds of silver have been found in these ores, as crystallized Cerargyrite, Embolite, Iodyrite, Bromyrite (?), and from the collection exhibited in New York a wonderfully large Iodyrite (silver iodide) was obtained. The soft, waxy, greenish crystals are hexagonal prisms and are very large, surpassing any examples previously contained in the mineral collection. Crystallized brown Embolite (chloro-bromide of silver) implanted upon black velvety stalactites of Limonite was found in the series, and exquisite specimens have been added to our collection.

Other additions, less notable, have been secured through the Bruce Fund, which still forms an invaluable means for the enrichment of the mineral collection.

L. P. G.

MUSEUM NEWS NOTES.

AT the quarterly meeting of the Board of Trustees held Monday, November 9, the following action was taken with regard to certain gifts to the collections of the Museum:

The Hon. Mason Mitchell, formerly Consul at Chung-king, China, was elected a Patron in recognition of his gift of ethnological material from Tibet and mammal skins from China.

Mr. Henry Booth of Poughkeepsie, New York, was elected a Patron on account of the gift of an extensive collection of material representing the archæology of Dutchess, Columbia, Putnam and Ulster Counties, New York.

Dr. Walter Channing of Brookline, Massachusetts, was elected a Patron on account of his gift to the Museum of a large collection of plaster casts from the hard palates of feeble-minded and normal human beings.

Mr. T. E. Donne of Wellington, New Zealand, was made a Life Member in recognition of his recent important additions to previous gifts of Maori material.

Mrs. Armar D. Saunderson was elected a Life Member on account of the gift of specimens of the Bongo Antelope and the Bush Pig of Africa.

Mr. Charles H. Townsend, Director of the New York aquarium, was made a Life Member in recognition of his gift of mounted specimens of birds from Alaska and ethnological material from the South Sea Islands.

Professor Wm. Morton Wheeler was elected a Patron in recognition of his gift of a collection of Formicidæ, and was made Honorary Curator of Social Insects.

Professor Bashford Dean was elected an Honorary Fellow because of gratuitous services during the past five years to the Department of Vertebrate Palæontology, especially in respect to the collection of fossil fishes.

In addition to those just named the following new members have been elected since the last issue of the Journal: Life Members, Mrs. Temple Bowdoin, Mrs. V. Everit Macy, Edwin Swift Balch, Jacob Langeloth; Annual Members, Mrs. Wm. B. Osgood Field, Rev. Hugh Birckhead, C. Ledyard Blair, Dr. Christian A. Herter, Rt. Rev. David H. Greer, Dr. Wm. M. Polk, Samuel Sloan, Jr., Mrs. J. A. Scrymser, Mrs. Walter B. James, Benjamin Douglass, Jr., Mrs. Douglas Robinson, Edwin R. A. Seligman, Dr. N. L. Britton, Howard Russell Butler, Charles H. Sternberg, Richard Tjäder, John C. Pennington, Mrs. Levi P. Morton, D. H. Pierson, Dr. George Roe Lockwood, Charles H. Platt, G. L. Morgenthau, Mrs. Leonard E. Opdycke, Dr. L. Putzel, William S. Coffin, Harry S. Seeley, Mrs. James Sullivan.

An important announcement was made at the Trustees' meeting of the gift by Mr. D. O. Mills to the Department of Mammalogy of eight specimens of the fur seal, to be utilized in the preparation of a group illustrating a seal rookery. The specimens were collected at the Pribilof Islands, Alaska, expressly for the Museum, by order of Mr. Mills, who had special permission from the Department of Commerce and Labor for their capture. The series consists of male seals two, three, five and seven years old, female seals three and four years old and two pups six weeks old.

The series of several thousand plaster casts of the palates of feeble-minded and normal children and adults by Dr. Walter Channing recently presented to the Museum forms an important addition to our physical anthropological collections, serving as comparative material of great value in the study of racial characters. The series is available to students upon application.

Mr. G. S. Bowdoin has presented to the Museum one of the elaborate feather capes for which the Hawaiian Islands have been famous. This specimen is one of the most perfect examples known and forms an extremely desirable addition to the collection of the Department of Anthropology.

Professor Wm. Morton Wheeler has presented to the Museum his entire collection of Formicidæ, which is the largest in this country and one of the three largest in the world. This collection represents such a large portion of the extensive family Formicidæ that all future additions can be readily interpolated in it. Nearly every species in the collection is represented by long series of specimens (often many hundreds in number) and includes many types, co-types and unique specimens.

The Museum suffers serious loss through the acceptance by Professor Wm. Morton Wheeler of the appointment to the professorship of Economic Entomology in Harvard University. Professor Wheeler's headquarters and laboratory will be at the Bussey Institution, which is located in Forest Hills, Boston, Mass., where he will have exceptional opportunity for carrying on research work as to the life history of insects inimical to forest trees.

Mr. G. Frederick Norton, a member of the expedition accompanying Commander Peary to the Arctic Regions last summer, has presented to the Museum a valuable series of ethnological specimens from the Eskimo of Disco Island and Holstenborg, South Greenland. The series consists of an unusually good kayak, or native hunting boat, about sixteen feet long; harpoons, harpoon points and seal skin floats; lines and throwing boards; a paddle; swivel; line receptacle and seal skin boots and pants.

Exhibits illustrating concretely the acorn, salmon and other industries of the Indians of California have recently been installed in the Hall of North American Types (No. 102 of the Ground Floor).

Two important additions to the series of North American habitat groups have recently been completed. These are the Duck Hawk group, representing a scene along the Palisades of the Hudson River, and the Hackensack Meadow group, which represents a section of this familiar range and the nesting habits of the birds which frequent it in August.

The fall exhibition of the Horticultural Society of New York was held at the Museum November 17–20. The number of entries was large, and the display of cut flowers and potted plants was most attractive, particularly in the classes of chrysanthemums, orchids and carnations.

Three floors of the new Columbus Avenue wing of the Museum have been set aside for the exhibition made by the Committee on the Prevention of Tuberculosis of the Charity Organization Society of New York, temporary stairways having been installed, so that ready access is had from one floor to the next. This exhibition aroused widespread interest during the time that it was held in connection with the recent International Tuberculosis Congress at Washington, and it is evident that it will attract even more attention and be visited by more people, while it is on view at the Museum. The exhibition is open free to the public during the usual hours and will continue for several weeks. Entrance to it may be had through the temporary doorway at the north end of the new wing, at the corner of Columbus Avenue and Seventy-ninth Street, as well as through the usual public entrance on Seventy-seventh Street.

LECTURE ANNOUNCEMENTS.

MEMBERS' COURSE.

Thursday evenings at 8:15 o'clock. Doors open at 7:45 P. M.

December 3.—Henry E. Crampton, "Tahiti and the Society Islands."

December 10.—Nathaniel L. Britton, "Some Native Trees, Their Flowers and Fruits."

(The Members of the New York Botanical Society will be the guests of the Museum on this evening.)

December 17.—Roy C. Andrews, "Whale Hunting with a Camera."

PUPILS' COURSE.

THESE lectures are open to the pupils of the public schools when accompanied by their teachers and to the children of Members of the Museum on the presentation of Membership tickets.

Lectures begin at 4 P. M.

Dec.

Wednesday, 2.—"'Hiawatha's' People." By HARLAN I. SMITH.
Friday, 4.—"Industries of the United States." By ROY W. MINER.
Monday, 7.—"Among the Filipinos." By ROY C. ANDREWS.
Wednesday, 9.—"Physical Geography from Pictures." By EDMUND OTIS HOVEY.
Friday, 11.—"Home Life of American Birds." By FRANK M. CHAPMAN.

LEGAL HOLIDAY COURSE.

OPEN free to the public. Fully illustrated. No tickets required.
Lectures begin at 3:15 P. M. Doors open at 2:45 P. M.

Thanksgiving Day, November 26.
"Mt. Pelé, Martinique, in 1902, 1903 and 1908,—the History of a Great Volcano. The Destruction of St. Pierre." By EDMUND OTIS HOVEY.

Christmas Day, December 25.
"Whale Hunting with a Camera." By ROY C. ANDREWS.

New Years Day, January 1, 1909.
"Florida Bird Life." (Illustrated with moving pictures.) By FRANK M. CHAPMAN.

Washington's Birthday, February 22, 1909.
"The Food and Game Fishes of the Eastern United States,—Habits and Methods of Capture." By ROY W. MINER.

COLUMBIA UNIVERSITY COURSE.

JESUP LECTURES.

GIVEN in coöperation with Columbia University.
Wednesday evenings at 8:15 o'clock.

Continuation of a course of lectures on light by PROFESSOR RICHARD C. MACLAURIN of Columbia University.

December 2.—"Dispersion and absorption of light. Recent theories. Electrons."

December 9.— "Spectroscopy. Applications to chemistry and astronomy."
December 16.— "Polarization, with some applications to chemistry and molecular physics."
January 6.— "The exact laws of reflection and refraction and their bearing on the construction of optical instruments."
January 13.— "Optical properties of crystals."
January 20.— "The principle of interference and its explanation of various color phenomena."
January 27.— "The measurement of light waves and the theory of diffraction."
February 3.— "Some relations between light and electricity."

PEOPLE'S COURSE.

Given in coöperation with the City Department of Education.

Saturday evenings at 8 o'clock. Doors open at 7:30.

Professor Bradley Stoughton of Columbia University,— a course of lectures on metallurgy, illustrated by experiments and stereopticon views.

December 5.— "The Uses of Iron and Steel in Machine Shops and Bridges and other great Engineering Structures."
December 12.— "The Rolling and Forging of Iron and Steel."
December 19.— "The Heat Treatment of Steel."

Tuesday evenings at 8 o'clock. Doors open at 7:30.

Mr. Charles M. Pepper, of the Department of Commerce and Labor, — illustrated lectures on "The Twentieth Century South America."

December 1.— "Argentine, the World's Wheatfield."
December 8.— "The Vastness of Brazil."
December 15.— "Colombia and the Andes."

Children are not admitted to the lectures of the People's Course, except on presentation of a Museum Member's Card.

MEETINGS OF SOCIETIES.

Public meetings of the New York Academy of Sciences and Affiliated Societies are held at the Museum according to the following schedule:

On Monday evenings, The New York Academy of Sciences:
First Mondays, Section of Geology and Mineralogy.
Second Mondays, Section of Biology.

Third Mondays, Section of Astronomy, Physics and Chemistry.
Fourth Mondays, Section of Anthropology and Psychology.

On Tuesday evenings, as announced:
The Linnæan Society, The New York Entomological Society and The Torrey Botanical Club.

On Wednesday evenings, as announced:
The New York Mineralogical Club.

On Friday evenings, as announced:
The New York Microscopical Society.

The programmes of the meetings of the respective organizations are published in the weekly *Bulletin* of the New York Academy of Sciences and sent to the members of the several societies. Members of the Museum on making request of the Director will be provided with the *Bulletin* as issued.

The American Museum Journal

EDMUND OTIS HOVEY, *Editor.*
FRANK M. CHAPMAN,
LOUIS P. GRATACAP,
WILLIAM K. GREGORY, } *Advisory Board.*

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